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AND
ESSENTIAL OIL REVIEW

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WE invite correspondence and special articles upon subjects of interest to all engaged in the manufacture and sale of Perfumes, Soaps, Toilet Articles, Flavoring Extracts, etc. THE AMERICAN PERFUMER and ESSENTIAL OIL REVIEW is the OPEN Forum for each and all in the Trade.

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CREDIT PROTECTION.

It is an axiom that modern business life is based on the proposition that the average man is honest, and will pay his just debts, when and in the manner agreed on. This confidence in human nature is expressed by the word credit. Unfortunately, however, the minority of dishonest, incompetent or lax business men makes the careful supervision of credit necessary and this need has evolved the modern credit man. In all but large concerns the employment of an expert credit man is hardly warranted, and as a result commercial agencies, such as Dun and Bradstreet have prospered.

The next step in the development of credit agencies seems to have been reached in the organization of The Drug, Chemical and Allied Trades Protective Association, 116 Nassau street, New York, which is designed to give co-operative credit protection. The plan of the Association is admirably stated it its prospectus, as follows:

"There is a class of dishonest dealers which seeks as well as schemes for credit by mirepresenting financial conditions. This Association will collect and collate accurate and reliable information relative to the standing of dealers affecting their business, capital, debts, solvency, credit and responsibility, which it will distribute with the view of preventing and guarding against losses resulting from fictitious incorporations, chattel mortgages, transfers, judgments and other dishonest methods of debtors in the drug line attempting to evade payment of their obligations.

It is one of the objects of the Association to furnish its members as fast as our methods enable us to obtain same with a list of delinquent debtors as well as of dealers who are of doubtful responsibility. This list will contain the names of those who fail to meet their obligations promptly, or are in bad repute financially and liable to fail. A thorough investigation will be made and the results promptly furnished our members, thus enabling them to determine what credit, if any, should be extended.

Experience has demonstrated the practicability and value of a central office for the registration of credit facts regarding the dealing of debtors with their merchandise creditors, thus concentrating in one place the

actual transactions of a firm, making it easy to keep track of over-buying.

The details, when handled with intelligent regard to their confidential character, are in no danger of injuring a good firm, but are certain to reveal weakness, dishonesty or lack of business acumen.

A premeditated failure can readily be discovered by the manner in which orders are given, offering an insight into the condition prevailing. Once you become a believer in the centralization of credit interests, you will quickly become convinced that our system is the best to secure co-operation in a practical form. Realization of this fact by each new member and his assistance to the Association naturally strengthens the service that the Association is able to give to all the others."

This Association should meet with the instant favor of manufacturing perfumers and others in this field that wholesale their products, and in view of its endorsement by such concerns as Lehn & Fink, Schieffelin & Co., Mallinckrodt Chemical Works, Seabury & Johnson, etc., it will make a bid for co-operation that will be hard to refuse.

Messrs. Newman & Butler, attorneys-at-law, are counsel, and the management will be in the hands of a board of directors chosen from the members of the Association, assisted by Mr. G. S. Mariager, a gentleman of wide experience as a credit man in the drug business.

THE DUTY ON ORANGE OIL.

As reported in our last issue, the Appraisers at the Port of New York have returned orange oil for duty at $1 per lb. under paragraph 21 of the tariff act, claiming orange oil to be a fruit oil in the meaning of the law.

On behalf of manufacturers of flavoring extracts, etc., we have requested the Secretary of the Treasury to issue an order to the collectors at the various ports of entry instructing them to return orange oil as an essential oil under paragraph 3 of the tariff act, instead of as an ether under paragraph 21.

Although most people may consider it futile to discuss the status of oil of orange, the fact remains that the treasury officials must be convinced of the truth and it is necessary to take up the question with them in an elementary way.

We would suggest that all interested write to the Secretary of the Treasury supporting our contentions. In our letter we have made the following points:

1. Oil of orange *is* an *essential oil.*
2. Oil of orange is *not* a *"fruit oil."*

In support of the first point we have quoted authorities who define essential oils as "odoriferous bodies of an oily nature obtained from vegetable sources, generally liquid (sometimes semi-liquid or solid at ordinary temperature), and volatile without decomposition." We have pointed out that in the case of orange oil, the oil occurs in the form of tiny globules residing in cells very close to the outer surface of the orange peel, and is obtained by expression.

Concerning point No. 2 we have pointed out that "fruit oils" of commerce are those synthetic products which are made in imitation of the flavors of certain fruits from which no essential oils may be obtained, such as peach, apple, pear, raspberry, strawberry, banana, pineapple, etc. These so-called oils are not mentioned in books dealing with essential oils nor in the United States Pharmacopoeia. They are usually made by blending about 75 per cent. concentrated fruit juice, 20 per cent. alcohol and 5 per cent. artificial ethers.

Paragraph 21 of the tariff act, which has caused all the trouble, bears a title, viz.: Ethers; and one of its clauses reads, "fruit oils, ethers or essences, $1.00 per lb.; ethers of all kinds not specially provided for in this section, 50c. per lb." This makes it very plain that nothing but ethers are meant to be covered by this paragraph, and therefore the words "oils" and "essences" are intended to be synonomous with the word "ethers."

This seems to be so plain that we anticipate an early and favorable decision from the Secretary of the Treasury, which will make it unnecessary for any importer to file a protest and fight the case before the Board of General Appraisers and possibly in the Federal Courts.

A NEW EXTRACT ASSOCIATION.

On August 25 the Flavoring Extract Manufacturers' Association of United States was formed in Cincinnati, Ohio, for the following purposes:-

"First, Co-operation; Promotion and Protection of the business interests of its members. *Second,* To foster and promote good-will among its members. *Third,* To assist in the enactment and enforcement of laws which in their operation shall deal justly with the rights of flavoring extract manufacturers and consumers."

The officers are as follows: W. M. McCormick, of McCormick & Co., Baltimore, president; A. Ullmann, of Dreyfus, Ullman & Co., Cincinnati, first vice-president; A. E. Claus, of Jones Bros., Brooklyn, N. Y., second vice-president; C. E. Hendrickson, of Royal Remedy and Extract Co., Dayton, O., third vice-president; Jacob Frank, of the Frank Tea and Coffee Co., Cincinnati, Treasurer; S. H. Baer, of Blanke-Baer Chemical Co., St. Louis, secretary. C. E. Foote, of Foote & Jenks, Jackson, Mich.; C. L. Sherer, of Sherer, Gillette & Co., Chicago, and C. S. Sauer, of Sauer & Co., Richmond, Va., are additional members of the Executive Committee.

We mention the purposes and officers of the association first because they are the criterion by which a prognosis of the future of the association may be made. One very significant clause of the by-laws excludes from membership any manufacturer who makes an inferior or impure product or who violates "the pure food law." Already sixteen firms have joined the association and forty-five more have pledged themselves.

According to Secretary Baer one of the prime objects will be to secure the amendment of State laws so as to bring them into conformity with the national law.

As we have often said before, there is room and need for an association of extract manufacturers *for the purpose of raising the standard of the trade,* so as to remedy and live down the odium that has attached to the trade in general through the adulterous practices of a minority.

We think it is fair to assume that the high character of the governing body of the association is a guarantee of its development along right lines, and certainly we shall indorse and assist its progress to the best of our ability, just as we turned the light on its predecessor when it fell into evil ways.

ESSENTIAL OIL ADULTERATION

Mr. J. C. Umney and Ernest J. Parry, the well-known English chemists, have written several articles that appeared recently in the *Chemist and Druggist*, describing new adulterants of essential oils. Mr. Umney refers to terpinolene and terpinyl acetate, and Mr. Parry intimates a third that he has isolated from South American oil of petit-grain, that has all the characteristics of an ethyl tartrate. The *Chemist and Druggist* says: "None of these, so far as we are aware, has hitherto been used for adulterating essential oils, and it is apparent that buyers must ever be on the *qui vive* for frauds of this nature. We do not suppose that there is more adulteration of essential oils than there used to be, but fraud has come into line with modern knowledge of the constitution of essential oils. It was different in the old days. We had a conversation recently with an experienced traveler, who recalled an incident of twenty years ago, when a pharmacist asked for a quotation for oil of lemon, and when the price was mentioned he said, 'Oh, I can buy much better than that,' and produced a sample of oil that had cost him a few pence per pound less. Thereupon the traveler said, 'That's all right; I can give you the same oil at a penny a pound less than that, and I'll bring you in a sample tomorrow.' In the interval the traveler went to another pharmacist, and at his dispensing counter mixed equal quantities of absolute alcohol and castor oil, and added the requisite amount of this mixture to his pure oil of lemon. Next day he submitted a sample of this, with one of pure oil and the cheap sample that the pharmacist had, all in bottles of the same size, marked A, B and C. The one containing alcohol and castor oil was picked out as the best by the pharmacist. Then the traveler mercifully stopped the transaction and explained the position to his customer as a warning never to trust to the nose alone, for in this case the alcohol (being more volatile than the oil) carries with it the lemon odor, and the first impression is that the adulterated sample is more fragrant than the pure. This old-fashioned adulteration is quite as effective as the modern, but is easily detected. What modern adulterators aim at is to defeat the chemical and physical processes of the analyst, as well as the nose expert, and it is deplorable that manufacturers should prostitute science by assisting sophisticators in this manner."

TERPINOLENE.

A NEW ADULTERANT OF ESSENTIAL OILS.

By John C. Umney, F.C.S.

The ingenuity of the sophisticator of essential oils is becoming greater and greater, and I think that an emphatic protest should be made against the preparation of adulterants by large manufacturers who cannot possibly believe that the "out-of-the-way" bodies that they are preparing can be made with any other than an illicit object. Moreover, I am loth to believe that the interests of these big distillers of essential oils and manufacturers of chemical products would not be better served by adhering to such type of business as can, in the long run, be advantageous to them. After all, the output of such products can only be a temporary one, and seems to me to necessitate experimental work more costly than the probable ultimate gain.

It must be borne in mind that these particular bodies can only be manufactured with a view to deceiving the analytic chemist, and one cannot give better examples than those which have been discovered in our analytical laboratory. Take, for example, triacetin or glycerin acetate (C. & D., lxii P. 591). It had no commercial value, and so far as I know was not even an article of trade, until some ingenious person thought that it might possibly serve as a useful adulterant for oil of peppermint, and possibly other essential oils—its physical and chemical characters, making it somewhat difficult of detection. Another inventive manufacturer hit upon ethyl citrate (probably not in this country, as its cost would have been somewhat high) as a substitute obviously of the very greatest utility in increasing the ester value of such oils as bergamot, lavender, etc., and with the former then at famine price a most useful adulterant (C. & D., lix, P. 691).

The latest adulterant, to which I now wish specially to refer, is one that is finding a place in certain essential oils, notably spike lavender which fairly readily mask it. It is probable that analysts depending solely on chemical examination, and not being familiar with the various oils of spike lavender distilled in different parts of France, Spain, etc., might pass an oil as pure on its chemical characters alone, in which to the practised nose the presence of this adulterant is at once apparent. The first impression of the oil is that it is decidedly pungent and camphoraceous, suggesting the presence of large quantities of cineol and camphor. The last impression of the oil after it has remained on blotting paper for some three or four hours is the odor of lilac, and it was this odor that suggested the probable presence of terpineol or some of the by-products in the manufacture of terpineol. Terpineol is found in small quantity in spike lavender oil, cineol being also present. The cost of terpineol led one to the idea that it would not be a very remunerative adulterant for an oil worth probably only half as much again as the terpineol itself, and on elaborating my experiments I was surprised to find that the body present is probably not terpineol but some of the by-products in the manufacture of terpineol, which, on making inquiry through Continental distillers, I found is offered under the name of terpinolene. Terpinolene itself is an optically inactive hydrcarbon, boiling at 185 deg. to 190 deg. C., and is formed from terpineol by the action of mineral acids. Commercial samples which I have examined vary in composition—that is to say, in the proportion of terpineol and terpenes present—and therefore also in their effects on the constitution of the sophisticated oil.

The odor of "terpinolene" becomes quite apparent on fractional distillation—the fractions boiling between 185 deg. and 195 deg. C., have an extremely pungent camphoraceous odor, and the nose alone is quite sufficient to identify the presence of something quite foreign to spike-lavender oil. The presence of a considerable proportion of terpineol naturally has the effect of putting up the alcohol-value of the essential oil.

Inquiries throughout the Continent confirm the view that this product, of the presence of which I am confident in the oils which I have examined, is being produced in large quantity and sold at 7d. per pound. It is, therefore, a very useful adulterant, and one against which it behooves everyone interested in essential oils to be on his guard.

I sincerely hope that the emphatic protest herein contained will be supported by those who have at heart the interest of the essential oil industry, and that weapons will not be put in the hands of the unscrupulous dealers to defeat the analyst who may be compelled to rely almost solely on chemical tests for determining the purity of essential oils, and who has not the opportunities of considerable experience in actually handling the various grades of the oil in which they may be employed as an adulterant.

ADULTERATED PETITGRAIN OIL.

By Ernest J. Parry, B.SC., F.I.C., F.C.S.

During the past month or two a number of samples of petitgrain oil have appeared in London, purporting to be genuine South American petitgrain oils, which, in fact, have been grossly adulterated. The older forms of adulteration are now less commonly met with, and, as has been pointed out from time to time by Messrs. Umney, Bennett, and myself, the scientific adulteration of essential oils is a matter to which certain chemists pay a considerable amount of attention. The fixing of standards of ester values, alcohol values, etc., although necessary in certain cases, has had its evil effect in rendering the adulteration of such oils more easy, and it is now necessary not merely to confine oneself to the estimation of the apparent percentage of such compounds present, but further to examine their nature. A circular has quite recently been issued by a Con-

tinental firm of chemical manufacturers in which the following statement occurs:

> We beg to draw your attention to our synthetic "neutral ethers," which is a product suited for mixing with essential oils which naturally have a high ester content; 1 per cent. of our ethers appears on saponification as 3 per cent. of esters, such as linalyl acetate, and it is absolutely impossible for an analyst to differentiate between such esters and our product.

A sample of this liquid which I examined proved to be the impure ethyl citrate to which attention has frequently been called in these columns. Such artificial esters can, of course, be detected by a full analysis, and have hitherto been found to be either ethyl citrate, ethyl oxalate, or ethyl succinate, as discovered in lavender oil by Schimmel & Co. Petitgrain oil is one of the latest oils to be attacked in this manner. Two samples which I have recently examined had the following characters:

	A	B
Specific gravity at 15° C.....	0.908	0.902
Optical rotation	+8°	+7°
Refractive index at 20° C.....	1.4622	1.4635
Esters (apparent)	48%	47%

Before the samples were suspected on their rather high specific gravities and optical rotations, it was obvious from their odor that there was something abnormal about them. This was confirmed by the fact that on boiling with alcoholic potassium hydroxide under a reflex condenser for a few minutes they became turbid, and a deposit was formed which rapidly increased. The amount of the samples at my disposal was insufficient for a very exhaustive examination, but sufficient facts were observed to enable me to be certain of the presence of artificial esters different in nature from those hitherto observed. On saponification with alcoholic potash, driving off the excess of alcohol, neutralizing the alkali, and adding excess of sulphuric acid, the residues were steam distilled, and the distillate collected through a long condenser. Volatile acids were obtained corresponding to less than 25 per cent. of esters in both cases, making it certain that non-volatile acids were in question. On distilling the oils under reduced pressure until 75 per cent. had been distilled, residues were obtained with high specific gravities and low refractive indices. The saponification residues of 10 grams were allowed to cool, then acidified with hydrochloric acid, and the aqueous liquids separated and concentrated. All the reactions now pointed to the presence of tartaric acid. I am unable to say definitely, but I am strongly of opinion that these oils were adulterated with an ethyl tartrate, probably diethyl tartrate. I am attempting to obtain a further supply of the oils, and am preparing specimens of ethyl tartrates for the purpose of comparison, when I hope to be able to identify the adulterant with certainty.

I have also recently met with two samples more clumsily and more impudently adulterated. On determining the physical characters and ester values of these two oils, I found them to give the following results:

	C	D
Specific gravity at 15° C.....	0.904	0.9035
Optical rotation	+2° 30′	+2°
Refractive index at 20° C.....	1.4568	1.4559
Esters (apparent)	43%	46%

On adding alcoholic potash, acid values of 10 per cent. and 15 per cent., respectively, were found, and the addition of aqueous potash to the oils made them semi-solid. The presence of free oleic acid was here almost certain, and after neutralizing with solution of potash and extracting several times with ether, the aqueous solutions were found to contain a large amount of soap. This adulterant does not seriously affect the solubility.

Manufacturers of terpineol appear to accumulate a large amount of residues which contain the oxidation and other alteration products of turpentine formed during the course of terpineol manufacture. This oil can be obtained for a few pence per pound, and is a viscuous oil, containing a fair amount of free alcoholic substances, of high specific gravity (up to 0.930) and various hydrocarbons. It has not yet been thoroughly investigated, but it appears to be imported into this country, and is, I believe, used for the adulteration of some essential oils. It will be necessary to watch carefully for its appearance.

OIL OF BERGAMOT.

By John C. Umney, F.C.S.

A startling change has come over oil of bergamot. The earthquake in Sicily, and the consequent destruction of stocks of this oil and the damage done to the growing trees, has been responsible for a very considerable advance in price, and although the extreme price of 40s. per pound, ruling in the early part of this year, has now receded to about 17s. to 19s. in first hands, the genuine oil is really scarce, and as now appears to be a natural sequence, the scarcity is leading to much sophistication. This sophistication is taking an ingenious form, the outcome of the scientific laboratory, and not of the dealer, who, however, too frequently appears to be a victim.

It is interesting to review the relative prices of bergamot oil and sweet-orange oil, which in its entire natural condition, or in its partial condition as terpenes, is now finding a place in bergamot oil.

APPROXIMATE COST OF BERGAMOT OIL AND SWEET-ORANGE OIL FOR TWELVE YEARS.

Year.	Bergamot Oil per lb.	Sweet-orange Oil per lb.
	s. d.	s. d.
1898.....	7 9	7 0
1899.....	8 6	5 0
1900.....	7 6	6 0
1901.....	8 0	4 0
1902.....	8 0	5 6
1903.....	7 6	5 9
1904.....	9 0	6 4
1905.....	8 6	6 9
1906.....	10 3	8 0
1907.....	12 6	8 6
1908.....	14 0	6 9
1909.....	16s. to 40s.	7 6

In 1895, when I reviewed essential oils in their relation to the British Pharmacopœia and trade (*C. & D.*, 1895, I, 620), especially with the idea of framing characters and tests for the pure oils met with in commerce that might be acceptable in a Pharmacopœia, I gave the characters of pure bergamot oil as under:

Specific gravity of 150° C.= 0.882 — 0.886.
Optical rotation not more than + 15° in 100-mm. tube.
Residue not more than 6 per cent. when evaporated on a water-bath
Esters as linalyl acetate not less than 38 per cent.
Soluble in twice its volume of 80-per-cent. alcohol.

At that time the pure oils varied in rotation from + 8° to + 15°, while the residue after evaporation for two hours of those that could be classed as pure oils was rarely, if ever, below 5.1 per cent. Several oils which were submitted to me during the past month had the following general characters:

Specific gravity at 15° C....	0.887
Optical rotation (100 mm.)..	+19° to +22°
Esters.....	41.0 to 41.5 per cent.
Non-volatile matter.....	4.4 to 4.5 per cent.

As the esters appeared to be normal, I was at first inclined to believe that last season's oil might have a higher rotation, but on critically examining the oils, especially in comparison with samples of known purity, I was struck by a difference in odor and a curious weakness, taking into consideration the high ester percentage. All of these oils were guaranteed pure, but in two instances the guarantee was that of a dealer who made his guarantee on the authority of a seller (in this country), and this solely on the authority of a shipper in Sicily, whom he did not even know.

It is obvious, from the prices that have been recorded, that orange oil and its terpene would now make a profitable adulterant for bergamot oil, but it would reduce the ester percentage and minimize the optical rotation. A splendid body to counterbalance these divergences was forthcoming in terpineol acetate, which has a pleasant but weak odor and the following characters:

Specific gravity at 150° C..... about 0.960
Optical rotation (100 mm.)..... *nil.*
Boiling range..... 220° to 230° C.

Commercial samples estimated approximately 90 per cent. of terpineol acetate.

Although manufacturers have ingeniously stated (see *C. & D.*, August 14, 1909, p. 292) that terpinolene has a valuable odor and for that reason they were justified in producing it, such a defence, I am afraid, can hardly hold good for terpineol acetate. This is now being supplied by manufacturers abroad, with instructions for mixing and a statement that an addition of 1 per cent. to the particular oil will raise the indicated ester percentage of the oil, calculated as linalyl acetate, by a certain proportionate amount.

Among the bodies that are being offered in addition to linalyl acetate are ethyl citrate, ethyl benzoate, and benzyl benzoate, the use of which in raising the apparent ester percentage is obvious from the following data:

1 per cent. of ethyl citrate = apparently 2.1 per cent. of linalyl acetate.
1 per cent. of ethyl benzoate = apparently 1.1 per cent. of linalyl acetate.
1 per cent. of benzyl benzoate = apparently 1.0 per cent. of linalyl acetate.

The residues of the oils under notice were seen at once to be abnormally low, and indicated the dilution with bodies leaving practically no residue; and from the physical character and the odor it seemed likely that the oils were mixed with orange oil or its terpene and terpineol acetate. The presence of the terpineol acetate was determined without difficulty by saponification of the oils, the lilac odor of terpineol being then sufficiently marked to be observed, even through the powerful odor of linalool.

I have in my possession samples of undoubted purity of this year's bergamot, and it may be interesting to record their chemical and physical characters—the difference in the odor-value of these natural oils containing 41 per cent. of natural linalyl acetate, as compared with the sophisticated 40-per-cent. ester oils, being most marked:

	1st Sample.	2d Sample.
Specific gravity at 15° C.	0.883	0.884
Rotation (100 mm.)...	+17°	+17°
Esters	40.6 per cent.	41.5 per cent.
Non-volatile matter...	5.2 per cent.	5.2 per cent.

From the observations I have made on oils produced this year I am of opinion that the optical rotation is slightly higher than it has been in past seasons, but I believe that any oil having the rotation of over + 20° should be rejected, and over + 18° should be viewed with grave suspicion. Moreover, any oil yielding a non-volatile residue of under 5 per cent. after drying for two hours on a water-bath should be deemed impure and sophisticated with bodies yielding practically no residue.

Once again we have to deplore the sophistication of a valuable oil, which can only bring about its disrepute, and in the case of bergamot this is certainly undeserved. It is also desirable, I think, to protest once more against the placing in the hands of dealers and others of substances only prepared for sophistication. I was recently informed by a distiller of essential oils that he was unable to obtain in competition an order for a certain pure oil, but the order was obtained by a dealer who purchased the pure oil from him, and a useful adulterant, the profit to him *on both of which together* was greater than on the sale of his pure article to the eventual customer. Why are manufacturers so blind to their own ultimate interests?

OLEORESIN VANILLA PATENT

931,805.—Oleoresin of Vanilla.—Edward J. Sheehan, of New York, N. Y., assignor to San Gabriel Valley Fruit Products Company, of New York, a corporation of New York. Specifications of Letters Patent. Patented Aug. 24, 1909. Application filed September 27, 1907. Serial No. 394,922.

To all whom it may concern:

Be it known that I, Edward J. Sheehan, a citizen of the United States, residing in the city of New York, State of New York, have invented and discovered a certain new and useful Oleoresinous Product from Vanilla Beans, which I term "oleoresin of vanilla," and of which the following is a full, clear and exact description.

Heretofore the only known extracts from the vanilla bean, so far as I am aware, are the commercial product "vanillin" and tinctures derived by alcoholic extraction, and commonly called ticture of vanilla. My newly discovered product differs therefrom principally in that it is an oleoresinous extract from the vanilla bean, and contains not alone the vanillin principle but a large part of the group of resins constituent in the bean and consisting of both acid and neutral resins; the production thereof, in my new oleoresinous extract having been suggested by the fact that in these odiferous resins a large part of the flavoring quality of the bean resides; and which, when present with the vanillin principle, and when most of the fatty acids are eliminated, makes a wholly new product well adapted for culinary use and far more effective in flavoring powers than any of the known commercial extracts of vanilla.

I do not assert that it was not well known that the bean contained a group of neutral and acid resins, waxes and fatty acids, as this has been described in Vol 9, page 1289 of the *Berichte of the German Chemical Society*, detailing the studies of Tiemann upon the composition of the vanilla bean and of his first synthesis of vanillin, and the further fact that from the fats present may be liberated unpleasant smelling fatty acids; but he made no quantitative determination of these constituents, nor any disclosure of their effect on the vanillin principle, nor any suggestion that an oleoresinous extract, as distinguished from an oily extract or tincture derived by alcoholic extraction of vanilla from the vanillin in the bean or from the crystallized vanillin, synthetically derived, could be obtained and prove useful; nor that the odoriferous quality resident in the constituent resins, and supplementing or modifying the odor of the vanillin largely, if not wholly, belonged as much to the neutral as to the acid group of resins present.

My new product therefore consists of an oleoresinous extract from the vanilla bean, the constituents of which are the usual percentage of vanillin extracted plus a very large percentage of both the acid and neutral resins, and including only a comparatively small part of the constituent waxes and fats, as hereinafter more particularly stated.

It is identifiable by the following characteristics determinable on analysis. In constituents, determinable by separation, 41 per cent. will be found to be soluble in aqueous alkali, 57 per cent. insoluble in like solution and 2 per cent. insoluble in organic solvents, but mechanically separable. The soluble 41 per cent., treated for extraction of vanillin, by shaking it out in a sodium bi-sulfite solution yielded 10 per cent. of vanillin, reckoned on the original oleoresin weighed, leaving 31 per cent. for organic acids and acid resins, which had been taken up in the aqueous alkali. These resins are decidedly odoriferous, differing distinctly from vanillin, and giving a new combined flavor to the concrete oleoresinous product. The 57 per cent. insoluble in aqueous alkali and thus separated as aforesaid, is composed of 41 per cent. of neutral resins and 16 per cent. of fats and waxes; the two latter not contributing to the odoriferous quality, but the neutral resins, like the acid resins, having odoriferous power, supplementing and modifying the odor of the vanillin constituent.

The 41 per cent. of neutral resins extracted, together with the 16 per cent. of fatty oils and waxes, will be found soluble in ether, chloroform, benzene and benzin, but insoluble in alcohol and aqueous alkali. This neutral resinous constituent is of a brownish color and nearly solid consistency, somewhat like a soft paraffin. While not so strong in odor and taste as the constituent acid resins it is distinctly aromatic, undoubtedly modifying the flavor of both the acid resins and the vanillin principle.

The 31 per cent. of organic acid and acid resinous constituent, determinable by separation as aforesaid, is soluble in either, chloroform, benzene, benzin, alcohol and aqueous alkali; in color it is a yellow amber; has an odor and taste resembling vanillin, but is of a resinous and pasty consistency. By slow sublimation it will yield an acid in fine white crystals melting at 73.5 deg. C. As a further test of identification, and differentiation of my product from the pharmacopœial tincture of vanilla, which give 10 per cent. of vanillin extracted with 65 per cent. alcohol, my oleoresin so treated yielded 21 per cent. of soluble constituent, of which, assuming that 10 per cent. was vanillin, determined 11 per cent. of the resins taken up in the 65 per cent. alcohol; hence the larger part of the neutral and acid resins present in my product are not taken up, from the bean, in the ordinary known methods of manufacture of tincture of vanilla; moreover the alcoholic solution, in this test of my product, had very little color, whereas both the acid and the neutral resins separated out by the aqueous alkali treatment before described were deep colored.

The valuable new elements contained in my new product as an extract direct from the vanilla bean are undoubtedly the two classes of acid and acid resins and of neutral resins which together aggregate approximately 72 per cent. of the whole substance and both of which are odoriferous constituents, each contributing to reinforce and modify the flavor of the vanillin; while the remaining 18 per cent., consisting of fatty oils, waxes and non-identifiable solid matter is a negligible part of those elements constituent in the bean.

Doubtless various methods of extracting from the bean my newe oleoresinous product, including the substitution of equivalent volatile solvents to those used by me as hereinafter stated, may be devised; but a practical method to accomplish the object is that employed by me and consisting, essentially, in finely chopping the bean and heating in a closed container, to a temperature up to a boiling point, in the presence of carbon tetrachlorid, acting as a volatile solvent, in the proportion of 5 per cent. by weight, of the material treated, but while I have found that percentage of such solvent to be suitable it may have to be varied slightly, due to differences in the beans from different localities and at different seasons; and while I prefer to heat the mass up to the boiling point, it may be that, for like reasons, a lesser temperature will be sufficient, but this is readily determinable by the described effect to be produced, as hereinafter stated. This treatment may be continued, with fresh carbon terachlorid, in like quantity, after an interval of an hour of treatment at such temperature, until the bean is almost if not completely exhausted; but I prefer to draw off the whole contents of the container after the first application of the volatile solvent, and replace the material to be treated with fresh volatile solvent, for a repetition of the first treatment. The solution is then drawn off, boiled, and the solvent recovered, by condensation in the still or otherwise, the new oleoresinous product remaining at the bottom of the still.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. The new product described, which is an oleoresinous extract from vanilla bean, of gummy consistency, a deep brownish-amber color, and containing approximately 10 per cent. of vanillin, and 72 per cent. approximately of combined acid and neutral resins, the former of which is soluble in aqueous alkali and the latter is not, and both of which are soluble in ether, chloroform and benzin.

2. The new product described, which is an oleo-resinous extract from vanilla bean, containing, in addition to 10 per cent. of vanillin, approximately 72 per cent. of combined acid and neutral resins, of gummy consistency, deep brownish-amber in color, and which on being treated with a 65 per cent. alcoholic solution yields but 11 per cent. of its resinous constituent.

3. The new product described, which is an oleoresinous extract from vanilla bean, of deep brownish-amber color and gummy consistency, and containing, in addition to 10 per cent. of vanillin, approximately 41 per cent. of neutral resins, of a brownish color, of the consistency of soft paraffin, insoluble in aqueous alkali and alcohol, but soluble in ether, chloroform and benzin.

4. The new product described which is an oleoresinous extract from vanilla bean, of brownish-amber color and gummy consistency, containing the following constituents determinable by analysis, namely 10 per cent. approximately, of vanillin, 31 per cent. approximately of organic acid and acid resins of amber color, and 41 per cent. approximately of neutral resins, of brownish color, the former being soluble and the latter insoluble, in organic solvents.

(*Concluded on page* 138.)

THE DETERMINATION OF ESSENTIAL OIL AND ALCOHOL IN FLAVORING EXTRACTS

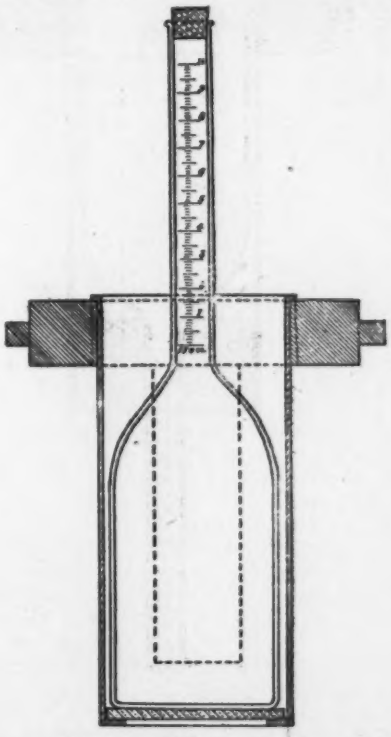
By JULIUS HORTVET and RODNEY MOTT WEST

(*Concluded from August issue.*)

Rose Extract.—On account of the small percentage of oil of rose which is commonly employed in making the extract, as well as the fact that the oil is not readily separated from solution by dilution with water, no attempts were made to apply the precipitation method. Furthermore, oil of rose is comparatively optically inactive and of such composition that the choice of a method appeared to be narrowed to that of extraction by means of an immiscible solvent. Accordingly, an extract was prepared by dissolving 0.4 cc. of oil of rose in 100 cc. of approximately 80 per cent. alcohol. A number of determinations were attempted, resulting finally in a method in some respects similar to the foregoing described for extracts of cinnamon and clove. It was, however, not found advisable to wash the ether solution with water or to apply the method of rapid evaporation over a water-bath. The method is as follows:

Twenty cc. of the extract are measured into a separatory funnel, 50 cc. of water added, the solution thoroughly mixed, acidified with 1 cc. of hydrochloric acid (1:1), and extracted with three portions of ether, using each time 20 cc. The combined ether extracts are transferred to a 150 cc. flask, shaken for a few minutes with some granulated calcium chloride, allowed time to settle to a clear solution, then decanted through a dry filter into a flat bottom glass dish previously weighed together with a cover glass. The calcium chloride and filter are twice washed with 10 cc. of ether and the washings added to the contents of the dish. The dish is covered, placed in a vacuum desiccator over sulphuric acid and allowed to remain until all traces of ether and alcohol are removed, then weighed, again placed in the desiccator at ordinary pressure for one hour and weighed again. The last operation is repeated if necessary and the weight recorded when practically constant. The final weight divided by 0.86 and multiplied by 5 gives the per cent. of oil of rose by volume.

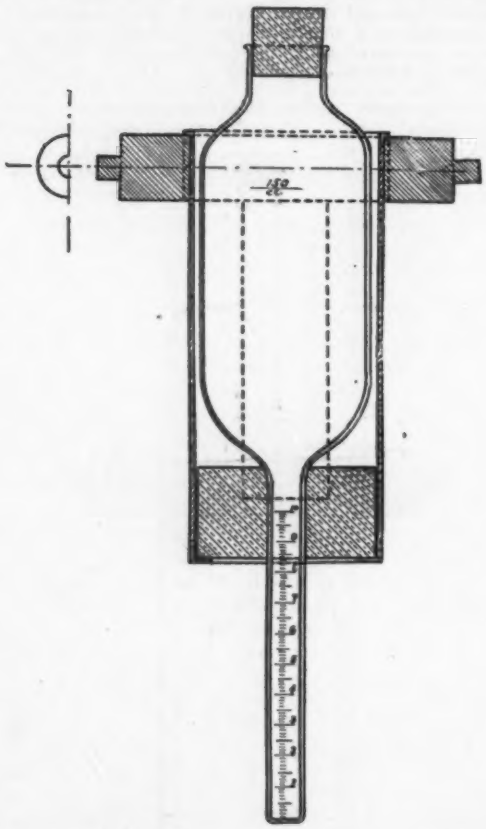
Lemon, Orange, Peppermint and Nutmeg Extracts.—According to chemical literature, menthol, the chief constituent of oil of peppermint, is found in the oil in amounts varying from approximately 40 to 90 per cent. Hence, any attempts to base a calculation of the amount of oil in extract of peppermint on the determination of the menthol content would be likely to yield unsatisfactory results. With oil of nutmeg the case is similar, the chief constituent of the oil being pinene which could not readily be determined in a solution containing the oil in amounts commonly employed in making the extract. It is apparent, also, from published data that the optical rotation of neither oil of peppermint nor oil of nutmeg could afford a successful polarimetric method. Preliminary trials, however, with the Official precipitation method for lemon extract were found to give satisfactory results. In the case of a peppermint extract made to contain 3 per cent. of the oil a correction of only 0.2 per cent. was found necessary, while in the case of a nutmeg extract made to contain 2 per cent. of oil scarcely an appreciable correction was required. It was considered, however, that for the purpose of further examination of the separated oil as well as for the alcohol determination, the amount of sample taken in the Official method is inadequate; hence it was thought that it might be desirable to devise an apparatus whereby there might be employed a large sample, thus avoiding some of the usual difficulties and at the same time possibly lessening the percentages of error in the results. The larger tube, shown in Fig. 1, is similar in shape to the Babcock milk test bottle, but is of 150 cc. capacity to the beginning of the graduations on the stem. The stem is graduated to read to tenths of one per cent., the divisions being based on the use of 50 cc. of sample in the determination. As the common form of centrituge is obviously not suitable for carrying the alrger test bottles, recourse was had to the Bausch and Lomb



precision centrifuge which was found to be admirably adapted to the requirements. A pair of special holders, suitable for carrying the bottles, is provided with the machine. The following method was found to work satisfactorily with extracts of lemon, orange, peppermint and nutmeg:

Fifty cc. of the extract are measured into the test bottle, the temperature noted, 1 cc. of hydrochloric acid (1:1) added, then water (previously heated to 60 deg. C.) poured in to near the beginning of the stem. The bottle, closely stoppered with a small cork, is allowed to stand in water 60 deg. C. for about 15 minutes, occasionally giving it a twisting motion to facilitate the separation of the oil, then run 10 minutes in the centrifuge at a speed of about 800 revolutions per minute. A little hot water is added cautiously until the oil rises above the 150 cc. mark and the bottle again run in the centrifuge 10 minutes. In case the

separation does not appear to be satisfactory, or if the liquor is not clear, good results are obtained by cooling the bottle and contents to about 10 deg. C., then running in the centrifuge an additional 10 minutes. Occasionally a light oil will be found which does not rise completely into the stem of the bottle. In such a case good results are secured by using salt solution (1 : 1), previously heated to 60 deg. C., instead of water. The per cent. of oil is measured by means of a pair of dividers, from the extreme bottom to the top of the column. The oil may then be removed by means of a small pipette and a piece of absorbent paper and



the remaining liquor used in the alcohol determination.

Wintergreen Extract.—(a) The precipitation method was also found to be applicable to extract of wintergreen, but, owing to the fact that oil of wintergreen has a specific gravity of about 1.18, the tube described in the foregoing method could obviously not be used. A tube was therefore constructed for heavy oils, as shown in Fig. 2. The capacity of the tube is about the same as that of the tube for light oils and the stem is also graduated to tenths of one per cent., based on a 50 cc. sample. This tube may also be fitted by means of a cork cushion into one of the special holders provided with the precision centrifuge. The method is essentially the same as the one given for light oils, omitting the heating in the water-bath previous to running in the centrifuge. At the close of the first 10 minutes' run the tube and contents are cooled to 10 deg. C. and the remainder of the operation is completed as described. The alcohol-water liquor is blown out into a test bottle made for light oils, the residual liquor rinsed out with a little water and the solution set aside for the alcohol determination. The remaining oil is then removed and examined for purity.

(b) Methyl salicylate constitutes about 99 per cent. of oil of wintergreen; hence a determination of this constituent in a wintergreen extract would give substantially the amount of oil. The following method was found to give good results.

Ten cc. of the extract are measured into a 100 cc. beaker, to cc. of a 10 per cent. solution of potassium hydroxide added, and the mixture heated over a boiling water-bath until the odor of oil of wintergreen has disappeared and the liquor reduced to about one-half its original volume. A 10 per cent. solution of hydrochloric acid is added to distinct excess and the liquor cooled. The salicylic acid is extracted with three portions of ether, using in succession 40, 30 and 20 cc., the combined ether extracts poured through a dry filter into a weighed dish, the filter washed with an additional 10 cc. of ether, and the combined filtrate evaporated slowly at about 50 deg. C. The crystals are dried one hour in a desiccator and weighed.

$$\frac{\text{Weight of salicylic acid} \times 1.101 \times 10}{1.18} = \text{per}$$

cent. of oil of wintergreen by volume. The preliminary work having been completed, three extracts were prepared from each kind of essential oil. One was made to conform to the standard given in Circular No. 19 of the United States Department of Agriculture and contained approximately the per cent. of alcohol required to dissolve the oil, one was made deficient in oil, and one was made to contain oil in excess of the standard and much higher than the necessary per cent. of alcohol. These solutions were then submitted to analyses according to the methods which have been described. The results are shown in Table I.

On examination of the table it will be seen that under the best conditions small corrections should be applied to the results in the case of most of the extracts. This is particularly true with extracts of cinnamon, peppermint and nutmeg. However, the errors will be found to be fairly constant, provided that the conditions under which the methods are carried out are kept as uniform as possible. It would be well for each operator to work on one or two known solutions according to each method and in that way determine for himself and for the conditions under which he works just what per cent. of oil he is able to recover. In thus establishing his own factors for the corrections, the personal equation inherent in each method will be largely eliminated.

The precipitation method described by Howard for the "estimation of oils in flavoring extracts and pharmaceutical preparations" was subjected to a number of preliminary trials on extracts made in this laboratory and was found to give results which in several cases were apparently satisfactory. Further experience, however, disclosed serious defects in the method. This occurred especially with almond extracts, in which ten determinations made strictly according to the prescribed conditions gave at best only a small proportion (never exceeding 0.15 per cent.) of the actual oil present. In some cases the results were nil, the oil having been apparently completely lost during the process. When the method was applied to some of the other extracts the results were more satisfactory, the reading of the oil column giving the exact per cent. of oil in several instances. At times, however, the results were either too high or too low, the variations occurring under seemingly identical conditions. A little consideration led to the conclusion that the method is faulty in several particulars. It semed incomprehensible that a one-half cubic centimeter of chloroform could be sufficient to remove from a 10 cc. sample of an extract all of the essential oil, even after the oil had ben par-

tially precipitated by means of water. Dilution of 10 cc. of a 90 per cent. alcohol to at most 40 cc. (the average capacity of a Babcock bottle) still leaves a solution containing approximately 20 per cent. of alcohol. Particularly in the case of extracts whose oils are fairly soluble in dilute alcohol, a 20 per cent. alcohol solution might be expected to retain a considerable amount of the oil. In arguing the complete extraction of the oil by his method, Howard states: "All the oil is dissolved by the chloroform, while the latter in saturating the water, apparently serves to displace any appreciable trace of oil, otherwise retainable by the alcohol-water mixture." The fact that the water becomes saturated with the chloroform arouses the suspicion that some of the oil may be retained in solution by the chloroform water mixture. During the evaporation of the chloroform the odor of the oil is very easily detected, and at the end of the prescribed one minute period of heating in contact with steam it is seldom that the odor of chloroform is not plainly evident. It is also conceivable that in certain instances a small amount of the oil may be taken up whenever dilute sulphuric acid is used for the purpose of raising the oil into the graduated neck of the bottle. Furthermore, experience has led to the belief that there is a greater loss of volatile oil during the evaporation of the chloroform than might be suspected, particularly in the case of such volatile oils as almond and cinnamon.

In order to decide some of these questions the various portions obtained in the Howard process were assayed separately for the per cent. of essential oil which they might contain. For this purpose such methods were used as have been found to be best suited to the oils in question. The results of these determinations are shown in Table II. Referring to the Table, "A" is the solution which was drawn off with the aspirator from the Babcock bottle after the first run in the centrifuge. After the operation was finished, the contents of the bottle were poured into a small separatory funnel, the oil allowed time to separate and the lower liquor run out as completely as possible and assayed as "B." The bottle was then rinsed out with ether and the rinsings added to the oil in the separatory funnel, constituting portion "C." The results under "D" were obtained by difference and represent the loss of oil during the evaporation of the chloroform. In the determinations made on the almond extracts the amounts of oil obtained were so very small that it became necessary to determine the proportions of oil present in portions "B" and "C" in one operation. In all cases where deemed necessary, qualitative tests were applied for the purpose of identifying the oil obtained.

The results shown in the table are significant. While in general the results by the Howard method are apparently correct in many instances, a closer examination will reveal the fact that the actual essential oil obtained seldom approximates to the amount contained in the sample. It is evident that a considerable amount of the oil is retained by the alcohol-water solution, also that a small amount is lost in the solution added to raise the oil into the graduated neck of the test bottle. The fact that in all cases only a portion of the column read off is shown to be essential oil is adequate evidence that various amounts of chloroform are retained in the process and erroneously included in the results. In other words, the method is one involving oppositely occurring errors that may or may not compensate in the results obtained.

TABLE I.—RESULTS OF THE DETERMINATION OF VOLATILE OILS IN FLAVORING EXTRACTS.

(Results expressed as per cent. by volume.)

	Composition of extract.		By extraction.		By precipitation.		By chief constituent.	
Kind of extract.	Per cent. alcohol used.	Per cent. oil.	Per cent. oil found.	Per cent. total oil found.	Per cent. oil found.	Per cent. total oil found.	Per cent. oil found.	Per cent. total oil found.
Almond	26.40	0.50	.....	.....	.....	.....	0.468	93.60
	26.40	1.00	.....	.....	.....	.....	0.937	93.70
	80.12	1.50	.....	.....	.....	.....	1.416	94.40
Cinnamon	68.72	1.00	0.982	98.20	.....	.....	.....	.....
	68.72	2.00	1.945	97.25	.....	.....	.....	.....
	94.92	3.00	2.941	98.03	.....	.....	.....	.....
Clove	84.67	1.00	0.991	99.10	.....	.....	.....	.....
	84.67	2.00	2.004	100.20	.....	.....	.....	.....
	94.92	3.00	3.005	100.17	.....	.....	.....	.....
Cassia	68.72	1.00	0.995	99.50	.....	.....	.....	.....
	84.67	2.00	1.998	99.80	.....	.....	.....	.....
	94.92	3.00	2.962	98.73	.....	.....	.....	.....
Lemon	84.67	3.00	.....	.....	2.90	96.67	.....	.....
	94.92	5.00	.....	.....	4.90	98.00	.....	.....
	94.92	7.00	.....	.....	6.80	97.14	.....	.....
Orange	84.67	2.00	.....	.....	2.00	100.00	.....	.....
	94.92	5.00	.....	.....	5.00	100.00	.....	.....
	94.92	7.00	.....	.....	6.85	97.86	.....	.....
Nutmeg	84.67	1.00	.....	.....	0.90	90.00	.....	.....
	84.67	2.00	.....	.....	1.85	92.50	.....	.....
	94.92	4.00	.....	.....	3.75	93.75	.....	.....
Wintergreen	68.72	1.50	.....	.....	1.15	76.67	1.460	97.33
	68.72	3.00	.....	.....	2.65	88.33	2.930	97.67
	94.92	5.00	.....	.....	4.60	92.00	4.836	96.72
Peppermint	84.67	1.00	.....	.....	1.15	76.67	.....	.....
	84.67	3.00	.....	.....	2.78	92.67	.....	.....
	94.92	5.00	.....	.....	4.75	95.00	.....	.....
Rose	80.00	0.40	0.360	90.00	.....	.....	.....	.....
	85.00	0.45	0.410	91.11	.....	.....	.....	.....

The determination of alcohol in flavoring extracts involves some peculiar difficulties which can best be referred to by giving a description of some of the methods which have heretofore been accepted. The method given by Allen[1] for the determination of alcohol in tinctures, modified so as to apply also in the presence of essential oils, is substantially as follows:

Fifty cc. are made up to 350 cc. by the addition of water, the liquid clarified by the addition of a few drops of a strong solution of calcium chloride followed by some sodium phosphate, made up to 400 cc., filtered through a dry filter, and 250 cc. of the filtrate distilled. The distillate is made up to 250 cc. by the addition of water and the density observed. The corresponding percentage of alcohol is multiplied by 8 to obtain the per cent. of alcohol in the original tincture.

[1] "Commercial Organic Analysis," 3rd Ed., Vol. I., p. 162.

The present Official method[2] involves the same principle, differing only in the amount of dilution and in the use of magnesium carbonate in place of calcium phosphate for removing the precipitated oil. In these methods, as in others which are essentially similar in all respects, the oil is at best only more or less imperfectly removed, a serious defect which has apparently failed to attract general attention. Thorp and Holmes[3] remove the oil by extraction with an immiscible solvent, proceeding as follows:

Twenty-five cc. of the sample are taken, 100 cc. of water added, the mixture saturated with common salt and shaken for 5 minutes with 70 cc. of petroleum ether (b. p. under 60 deg. C). The aqueous layer is then drawn off and the petroleum ether washed twice with 25 cc. of saturated salt solution. These washings are added to the original aqueous solution and the whole distilled slowly until 100 cc. of distillate is obtained. The alcoholic content of the distillate is multiplied by four to obtain the per cent. of alcohol in the extract.

In all of these methods the fact is apparently ignored that in every case the volume that was originally occupied by the essential oil in the aliquot portion taken for the specific gravity determination is replaced by the alcohol-water mixture, thus making the results for alcohol too high. In other words, a true aliquot portion of the sample after removal of the oil is never taken. The error is increased in direct proportion to the amount of alcohol in the extract. Winton and Ogden[4] recognize the latter fault in the Official method in their modification which is as follows:

Thirty grams of the sample are diluted with water to 200 cc., the mixture poured into a dry Erlenmeyer flask containing 3.5 grams of light carbonate of magnesia, then well shaken and filtered quickly through a large dry plaited filter. The alcohol is determined in 150 cc. of the filtrate, the per cent. by weight in the extract being calculated by the following formula:

$$x = \frac{100ab\,(200 - cd/86)}{150c}, \text{ in which}$$

x = per cent. of alcohol by weight in the extract.
a = weight of the distillate.
b = per cent. of alcohol by weight in the distillate.
c = weight of the extract.
d = per cent. of oil by weight in the extract.

T. H. Harvey[5] also realized the need of a modification of the method and proposed the following:

TABLE III.—RESULTS OF THE DETERMINATION OF ALCOHOL IN FLAVORING EXTRACTS BY THE PRESENT OFFICIAL METHOD FOR LEMON EXTRACTS.

(Results expressed as per cent. by volume.)

Kind of extract.	Composition of extract. Oil.	Alcohol.	Alcohol found.	Per cent. of total oil in distillate.
Almond	0.50	26.27	26.30	.....
	1.00	26.14	25.36	98.20
	1.50	78.92	78.94	99.33
Cinnamon	1.00	68.03	68.32	66.72
	2.00	67.34	67.20	45.77
	3.00	92.07	92.40	43.60
Clove	1.00	83.82	84.36	63.72
	2.00	82.98	83.96	49.23
	3.00	92.07	92.04	43.06
Cassia	1.00	68.03	68.32	64.74
	2.00	82.98	82.44	43.89
	3.00	92.07	92.04	39.10
Lemon	3.00	82.13	83.20	6.35
	5.00	90.17	91.68	3.58
	7.00	88.28	91.68	1.53
Orange	2.00	82.98	83.56	4.26
	5.00	90.17	91.68	3.08
	7.00	88.28	91.68	4.35
Peppermint	1.50	83.40	83.20	.....
	3.00	82.13	82.44	.....
	5.00	90.17	90.56	.....
Wintergreen	1.50	67.69	67.70	21.40
	3.00	66.66	67.52	12.00
	5.00	90.17	90.56	9.24
Nutmeg	1.00	83.82	83.56	27.08
	2.00	82.98	82.84	20.15
	4.00	91.12	92.04	6.16

The extract is diluted to not more than three times its original volume, the liquor distilled and the distillate treated with about 0.5 gram of previously washed and dried kaolin to remove the undissolved oil. The specific gravity of the distillate is determined, and from the corresponding alcohol found the per cent. of alcohol in the sample is calculated.

In attempting to apply these methods to extracts in general, the fact should not be overlooked that dilution and filtering with magnesia or kaolin fails in many instances to effect the complete removal of the oil. It has been found in the case of extracts prepared in the laboratory that after diluting from 50 cc. to 200cc. and filtering through magnesia, a clear solution was obtained, but, particularly in the case of oils which are more readily soluble in dilute alcohol, the distillate is cloudy when the first 60 or 70 cc. have passed over.

TABLE II.—RESULTS OF THE EXAMINATION OF HOWARD'S METHOD.

(Results expressed by volume.)

Kind of extract.	Composition of extract. Per cent. alcohol.	Per cent. oil.	Per cent. oil by Howard's method.	Assay of "A." Oil found.	Per cent. total oil found.	Assay of "B." Oil found.	Per cent. total oil found.	Assay of "C." Oil found.	Per cent. total oil found.	Per cent. oil in column.	Per cent. chloroform in column.	"D." Oil.	Per cent. total oil.
Almond	26.14	1.00	0.15	0.0278	27.80	.....	.....	0.0596	59.60	.....	.....	0.0126	12.60
	78.92	1.50	0.15	0.0397	26.47	.....	.....	0.0795	53.00	.....	.....	0.0308	20.53
Cassia	68.03	1.00	1.20	0.0153	15.30	0.0209	20.90	0.0632	63.20	52.67	47.33	0.0006	0.60
	82.98	2.00	2.00	0.0322	16.10	0.0238	11.90	0.1380	69.00	69.00	31.00	0.0060	3.00
	92.07	3.00	2.40	0.0571	19.03	0.0306	10.20	0.1992	66.40	83.00	17.00	0.0131	4.37
Cinnamon	68.03	1.00	1.20	0.0136	13.60	0.0262	26.20	0.0491	49.10	40.92	59.08	0.0111	11.10
	67.34	2.00	2.40	0.0255	12.75	0.0524	26.20	0.1035	51.75	43.15	56.85	0.0186	9.30
	92.07	3.00	2.80	0.0737	24.57	0.0379	12.63	0.1749	58.30	62.48	37.52	0.0135	4.50
Clove	83.82	1.00	1.10	0.0162	16.20	0.0095	9.50	0.0670	67.00	60.91	39.09	0.0073	7.30
	82.98	2.00	2.00	0.0377	18.85	0.0057	2.85	0.1409	70.45	70.45	29.55	0.0157	7.85
	92.07	3.00	2.70	0.0699	23.30	0.0115	3.83	0.2075	69.17	76.85	23.15	0.0111	3.70
Lemon	82.13	3.00	3.40	0.0133	4.44	0.0020	0.67	0.2406	80.20	70.76	29.24	0.0441	14.69
	90.17	5.00	4.80	0.0253	5.06	0.0023	0.46	0.4434	88.68	92.38	7.62	0.0290	5.80
	88.28	7.00	5.60	0.0100	1.43	0.0011	0.16	0.6683	95.47	92.82	7.18	0.0206	2.94
Orange	82.98	2.00	2.00	0.0110	5.50	0.0021	1.05	0.1548	77.40	77.40	22.60	0.0321	16.05
	90.17	5.00	4.80	0.0453	9.06	0.0063	1.26	0.3995	79.90	83.23	16.77	0.0489	9.78
	88.28	7.00	5.60	0.1040	14.86	0.0047	0.67	0.5145	73.50	91.88	8.12	0.0768	10.97
Wintergreen	90.17	5.00	5.20	0.0030	0.60	0.0360	7.20	0.4439	88.78	85.36	14.64	0.0171	3.42
Nutmeg	83.82	1.00	0.80	0.0195	19.50	0.0102	10.20	0.0536	53.60	67.00	33.00	0.0167	16.70
	91.12	4.00	3.60	0.0479	11.98	0.0187	4.67	0.3204	80.10	89.00	11.00	0.0130	3.25

NOTE.—Two extracts of wintergreen, one of nutmeg and the three peppermint extracts made in the laboratory were exhausted before this investigation of Howard's method was begun.

[2] Bull. 107, U. S. Dept. of Agr., Bureau of Chemistry, p. 160.
[3] *Jour. Soc. Chem. Ind.*, 22, 232 (1903).
[4] Report Conn. Agr, Expt. Sta., 1901, Part II., p. 172.
[5] *Chemist and Druggist*, 1904.p. 178.

On cooling the distillate to 15.6 deg. C. for the specific gravity determination, a small amount of oil separates from the milky liquid. In order to determine the amount of oil carried over in the distillation, an assay of essential oil was made in each of the distillates obtained in applying the Official method for lemon extract to the extracts prepared in the laboratory. The results are shown in Table III.

In an extract composed only of alcohol, essential oil and water, the problem of determining the alcohol content may not present any serious difficulties. In such a case the determination of the oil and the specific gravity would afford sufficient data for the exact calculation of the per cent. of alcohol, as in the following:

Let S represent the specific gravity of the extract at 15.6 deg. C., O the specific gravity of the oil, and p the per cent. of oil found. Then $100 - p$ will be the per cent. of the water-alcohol solution, the specific gravity of which, represented by P, is calculated as follows:

$$S = \frac{Op + P(100 - p)}{100}, \text{ whence } P = \frac{100S - Op}{100 - p}.$$

The value of E, the alcohol equivalent of P, is obtained by means of an alcohol table and gives the per cent. of alcohol in the alcohol-water solution. To find the per cent. of alcohol in the extract, it is necessary to apply the following formula:

Per cent. by volume of alcohol in the extract =

$$E\left(1 - \frac{p}{100}\right).$$

In extracts containing other substances such as glycerine and sugar, recourse may be had to distillation in order to obetain a mixture consisting only of alcohol, water and essential oil. Having made the distillate up to the volume of the sample of extract taken, the per cent. of oil and the specific gravity are determined and the alcohol content of the original extract obtained according to the above formula. There may, however, be some hesitation in accepting a method which requires a distillation and a second determination of essential oil, since for ordinary purposes in routine work the per cent. of alcohol can safely be derived from the specific gravity of the extract, providing the character of the sample be ascertained by a qualitative examination of the solids. In all cases where the oil can be separated by means of the centrifuge the alcohol may be determined as follows:

The alcohol-water liquor, freed as completely as possible from essential oil, is made up to 150 cc. in the test bottle for light oils and the temperature noted. In case the liquor happens to measure beyond the 150 cc. mark, the exact volume is read off on the stem. The liquor is poured into a distilling flask, the residue washed into the flask with about 30 cc. of water, the mixture distilled into the test bottle to near 150 cc. and the distillate made up to the original volume at the temperature previously noted. After thorough mixing, the liquor is cooled to 15.6 deg. C., the specific gravity determined and the alcohol equivalent found. The result multiplied by the factor obtained by dividing the exact volume of the distillate by 50 gives the per cent. of alcohol in the original extract.

The extracts prepared in the laboratory were finally subjected to alcohol determinations, by the Official provisional method, by the method based on the determination of the specific gravity of the extract, by the application of the formulae given above and by the method applicable after the centrifugal separation of the essential oil. The results are shown in Table IV.

TABLE IV.—RESULTS OF THE DETERMINATION OF ALCOHOL BY VARIOUS METHODS.
(Results expressed as per cent. by volume.)

Kind of extract.	Alcohol in the extract: Strength used for solution of the oil.	Alcohol in the extract: Per cent. by calculation.	Per cent. by provisional method.	Per cent. by specific gravity without distillation.	Per cent. by calculation from specific gravity by formulae.	Per cent. by centrifugal method.
Almond	26.40	26.27	26.30	25.67	25.91	.....
	26.40	26.14	25.36	25.27	25.78	.....
	80.12	78.92	78.94	79.00	78.88	.....
Cinnamon	68.72	68.03	68.32	68.09	68.03	.....
	68.72	67.34	67.20	67.61	67.45	.....
	94.92	92.07	92.40	93.17	92.13	.....
Clove 84.67		83.82	84.36	83.94	83.75	.....
	84.67	82.98	83.96	83.25	82.91	.....
	94.92	92.07	92.04	93.00	92.02	.....
Cassia	68.72	68.03	68.32	68.05	67.99	.....
	84.67	82.98	82.44	83.28	82.95	.....
	94.92	92.07	92.04	98.86	91.85	.....
Lemon	84.67	82.13	83.20	85.00	82.55	82.26
	94.92	90.17	91.68	94.66	90.47	89.69
	94.92	88.28	91.68	94.48	88.65	88.42
Orange	84.67	82.98	83.96	84.97	83.27	83.06
	94.92	90.17	91.68	94.61	90.21	90.11
	94.92	88.28	91.68	94.46	88.45	88.55
Peppermint ...	84.67	83.40	83.20	84.41	83.47	83.58
	84.67	82.13	82.44	84.18	82.23	82.20
	94.92	90.17	90.56	93.67	90.13	89.58
Nutmeg	84.67	83.82	83.56	84.60	83.89	83.85
	84.67	82.98	82.84	84.54	83.10	82.20
	94.92	91.12	92.04	94.15	91.12	91.29
Wintergreen ..	68.72	67.69	67.70	66.86	67.57	66.81
	68.72	66.66	67.52	65.29	66.80	66.97
	94.92	90.17	90.56	89.52	89.93	89.01

Chemical Laboratory,
Minnesota State Dairy and Food Department,
St. Paul, Minn.

THE LEAVES OF THE ORANGE TREE AND PETITGRAIN OIL.

By L. Mazuyer.

(*Concluded from August issue.*)

PROPERTIES, COMPOSITION, ADULTERATION, VARIETIES, VALUE, HISTORY.

Oil of petitgrain is numbered among those whose use is most frequent; it finds a place in the laboratory of every perfumer. It is used together with oil of neroli, in the formulas of good cologne waters, which fact alone would suffice to explain the great consumption of it; but in addition, it enters into a great number of compounded (synthetic) oils of neroli used in the manufacture of cheap cologne waters, the consumption of which is daily on the increase.

The distillation of the indigenous petitgrain oils has no specially distinctive feature, and yet it must be done in a uniform manner in order to avoid the escape of vapor which gives to the distillate a burnt odor that sometimes goes away slowly.

The yield depends upon many causes and varies for the bigarade oil from 2.2 to 1.5 per thousand.

PROPERTIES.

The petitgrain oils have often been studied and their constants determined with sufficient exactness to permit their use for the test. These oils are not admitted to

the French pharmacopœia, nor to the great part of foreign ones. We give below the properties of the oil which is a type of the species, the petit grain oil, "bigarade."

COLOR FLAVOR.

The oil is of a pale yellow to dark yellow color; the taste is aromatic, a little bitter.

SPECIFIC GRAVITY OF 15 DEG. CENT.

This, according to Jeancard and Satie, varies from 0.888 to 0.895. The range given by Charabot and that given by Gildemeister are less restricted; the former says from 0.890 to 0.900; the latter from 0.887 to 0.900. It must be said that certain constants of the oils, and particularly their specific gravity, vary with the place of their origin and with climatic influences; for this reason Jeancard and Satie,[1] in a recent study of the subject, suggest to add to the idea of a general range, that of an annual one, which would permit greater exactness. These same authors give the annual average of the specific gravity of petit grain oil, "bigarade," distilled at Cannes, in 1908, as between 0.8882 and 0.8896.

ROTARY POWER.

According to Schimmel & Co., this is sometimes dextrogyrate, but oftener levogyrate, ranging in this last case between 3 deg. and 6 deg. Among indigenous oils, rarely have any been ascertained to be dextrogyrate.

SOLUBILITY.

It is soluble in its own volume of alcohol of 80 deg.; in 2½ to 3 times its volume of alcohol of 70 deg., sometimes in a lesser proportion. The solution appears often turbid in the case of old oils.

SAPONIFICATION VALUE.

This ranges between 150 and 165, according as the quantity of ester varies from 52 per cent. to 57 per cent. Gildemeister gives a larger range, from 110 to 245, equivalent to on ester value from 38 per cent. to 85 per cent., which last percentage is rarely reached with native oils. Jeancard gives the range for 1908 as 130 to 147, or from 45 per cent. to 51 per cent of ester.

CHARACTER OF THE COLORING.

Dr. Liotard has taken pains to investigate this subject. We give the following memorandum of his work from memory: The reagent iodo-iodide (iodine, 20; iodide of potassium, 40; distilled water, 1.000) turns the petit grain oil, "bigarade," brown; bromated chloroform gives a greenish color after a moment; the reagent of Millon colors it slightly yellow, when warm; lastly, it deepens in color by the addition of a hydrochloric solution of chloral, rising also in temperature.

COMPOSITION.

Tiemann and Semmler[2] were the first (1892) to identify in the product which first comes over from the distillation, right-handed (limonene), which is also contained in other oils of fruits of the Auranticea (French Hespéridées) as: orange, lemon, bergamot, mandarin.

According to Charabot and Pillet[3] the presence of limonene is due to the young oranges, as the oil obtained from the leaves and twigs only does not contain it. Jeancard and Satie have discovered traces of dipentine, a modification of limonene of pinene and of left-handed camphene.

In the greater part, whose boiling point is between 102 and 106, Tiemann and Semmler found the linalol partly in a free state and partly in the state of ester. Later Mr. Parry[4] discovered the presence of geraniol and acetate of geranyl.

Bertram and Walbaum[5] have called attention to the fact that it is well to estimate the value of petit grain oil according to the ester it contains, as is customary with bergamots and lavenders. This content is, however, extremely variable. We have seen above that the differences are considerable between the figures of this constant, as determined from the oils analyzed in the Schimmel laboratories. Ought we to infer that the indigenous oils, the quantity contained in which ranges from 50 per cent. to 60 per cent., are inferior? We do not think so.

ADULTERATION AND TEST.

Petit grain oil is adulterated with oils of orange, lemon, bergamot, rosewood, turpentine and with cheaper sorts of oils. These adulterations can be detected at the time of the examination for their physical constants.

The addition of the oil of orange and bergamot lowers the specific gravity; the addition of oil of rosewood diminished only slightly the specific gravity, but raises the rotatory power. Bergamot reduces the solubility in weak alcohol.

Adulteration with spirits of turpentine may be known by methods in use, furthermore at the time of the mixture of the component parts, strong traces of pinene ought to cause the oil to be suspected; adulteration by inferior oils is more insidious. In this case there is little except the sense of smell to be relied on.

PETIT GRAIN OIL, "PORTUGAL."

The properties of the oil produced by the branches of the sweet orange have been less studied. Mr. G. Litterer[6] has shown that it contains an abundance of terpenic matter, in which right-handed camphene and limonene have been identified; citrol has been discovered in the proportion of 4 per cent.; alcohols, partly in a free state, partly in the form of ester, in the proportion of 20 per cent. among which is geraniol.

In fact the constitution of this oil differs enough from that of its congener, the petit grain oil "bigarade," while resembling that of the oil of portugal and the oil of "bigarade." The product of the leaves and young branches (known in French as "brouts"), of the orange tree known as "portugal," is somewhat inferior to that of the orange tree known as "bigaradier." On this subject one may profitably consult a voluminous report on the formation and distribution of oil in the branches of this species which appeared in the "Bulletin Scientifique et Industriel," of Roure-Bertrand fils.[7]

[1] La Chimie des Parfums in 1908.
[2] Berichte der Deutschen Chemischen Gesellschaft (25), 1180.
[3] Bulletin de la Société Chimique 1899 (21), 74.
[4] Bulletin de la Société Chimique, 1897 (17), 519.
[5] Journal für praktische Chemie (49), 590.
[6] Bulletin de la Société Chimique, 1905 (33), 1070.
[7] 1905, 2nd Series (2), 19.

PETIT GRAIN OIL FROM THE LEMON TREE.

Petit grain oil from the lemon tree has an odor which recalls that of the ordinary petit grain with a pronounced suggestion of the lemon. It has been studied at different times in the Schimmel laboratories. More recently Mr. Litterer has obtained an oil with a density of 0.8824 at 15 deg. Cent., varying + 21 deg. 08 min. Citral was found in it in the proportion of 24 per cent.; the oil freed from citral contained 21.7 per cent. of alcohols, partly free, partly combined, of which 11.2 per cent. was free geraniol. There was also a trace of limonene.

PETIT GRAIN OIL FROM THE MANDARIN TREE.

This oil has been less studied. Charabot has proved the presence in it of methylanthranilate, which constitutes the fluorescent principle of the oil of mandarin.

It is not easy to estimate the value of the petitgrain oils of the indigenous lemon and mandarin trees. Their rarity prevents them from being a common article of commerce, and on that account consumers avoid them. The petit grain oil "bigarade" is, on the contrary, very much esteemed; it holds its price well, and for some time of late quotations have been higher by reason of an active demand. The petit grain oil "portugal" is less highly esteemed than the last named, but its lower price causes it to be used as a substitute for the "bigarade." Let us remark that it is not always to be had, because the production of it is not regular. Besides the department of the Maritime Alps there are other centers which produce the petit grain oil. Sicily furnishes some of a quality made by a mixture of branches of different sorts of aurantiaceae. Paraguay produces a considerable quantity of oil inferior in quality to the French oil bigarade, but which has its friends. Hoffmann reports that the French colonists introduced its manufacture there about 1880. The properties of the distillate in Paraguay recall those of the indigenous oil; sometimes they are found less soluble, by reason of defects in the distilling process.

Unfortunately the internal conditions are too frequent, the natural indolence of the natives, who lack enterprise and dislike all effort, render the regular production of this important product a matter of difficulty. If to this be added a complete lack of means of internal communication and the occasional ravages of the plague, which close the outlets of Buenos Ayres and the Argentine coast, it is not astonishing that the market should be sometimes overstocked and sometimes bare. At present the attention of buyers seems to be attracted to this oil which had been neglected because of its former high price.

Petitgrain oil was one of the last to make its appearance in the supply of the perfumer; while the oils of the lemon family and of orange skins were known in the 16th century—they appeared for the first time in the successive editions of the *Dispensatorium Noricum of Valerius Cordus* from 1540 to 1589—the one we speak of is mentioned in no work. May it have been that it entered into the original formula of Johann Maria Farina? This would lead us to suppose that it was in use in 1725; it, however, could not have been widely known, for we find no mention of it in an ancient treatise on perfumes in 1775, which nevertheless makes mention of the oils of cedrat, lemon, bergamot, "limette" and neroli.

PURE FOOD AND DRUG NOTES.

In this section will be found all matters of interest contained in FEDERAL and STATE official reports, newspaper items, etc., relating to perfumes, flavoring extracts, etc.

FEDERAL.

SHORT WEIGHTS AND VOLUMES.

Many hearings have been held before the Board of Food and Drug Inspection in which the weight or volume of a package of foods or drugs has been found to be lower than that claimed on the label. Many excuses have been offered for these variations. It seems advisable, in view of the quite common occurrence of such cases, that a full discussion of this subject should be secured

All manufacturers and jobbers interested in the matter of the correct stating of weight and volume are therefore asked to appear before the Board on Thursday, September 30, 1909, at 10 a. m. in the Board room, main building of the Department of Agriculture, Washington, D. C., for the purpose of discussing all the points which may be raised under the law in regard to this matter.

H. W. WILEY,
Chairman.

September 9, 1909.

NOTICE OF JUDGMENT, NO. 91, FOOD AND DRUGS ACT.

MISBRANDING OF LEMON, RASPBERRY, AND STRAWBERRY EXTRACTS.

In accordance with the provisions of section 4 of the Food and Drugs Act of June 30, 1906, and of regulation 6 of the rules and regulations for the enforcement of the act, notice is given that on the 21st day of January, 1909, in the district court of the United States for the district of Oregon, in a prosecution by the United States against the Dwight-Edwards Company, a corporation of Portland, Ore., for violations of section 2 of the aforesaid act in the shipment and delivery for shipment from Oregon to Idaho and Montana of three certain articles of food labeled, "Pine Bur Flavoring Extract, Lemon," "Edwards' Dependable Pure Extract Raspberry," and "Edwards' Dependable Pure Extract Strawberry," which were misbranded within the meaning of section 8 of the aforesaid act as hereinafter stated, the said Dwight-Edwards Company having entered a plea of guilty, the court imposed upon it a fine of $25 for each of the three offenses.

The facts in the cases were as follows:

On October 31, 1907, an inspector of the United States Department of Agriculture purchased from W. A. Sprague, Nampa, Ida., a sample of an article of food labeled, "Pine Bur Flavoring Extract, Lemon, Dwight-Edwards Company, Portland, Ore." This sample was part of a shipment made by the Dwight-Edwards Company from Portland, Ore., to W. A. Sprague, Nampa, Ida., on September 20, 1907. The sample was subjected to analysis in the Bureau of Chemistry, United States Department of Agriculture, and it was found that it contained only 1.62 per

(*Continued on page* 133.)

TRADE NOTES

Mr. J. H. F. Miles, perfumer for The Heffron Co., Syracuse, N. Y., looked in on his New York friends early in the month.

"Joe" Mathias, manager for James B. Horner, the New York essential oil dealer, spent "three weeks" fishing in the St. Lawrence River. He brought back the usual crop of fish stories.

Mr. L. L. Wood, secretary of the Turner-Wood Co., Louisville, Ky., was a recent visitor to our *sanctum sanctorum*. The company was organized in May of this year, and is capitalized for $25,000. David A. Keller is president, and O. T. Turner, treasurer.

L. L. WOOD.

O. T. TURNER.

Messrs. Turner and Wood, whose photos we reproduce, are men of wide pharmaceutical training and experience in the South. They have chosen to make perfumes and toilet preparations of the finest quality only, believing, and justly, too, that there will always be a ready sale for goods of the first grade.

Upon the suit of the First National Bank, of Berwick, Pa., the personal property and equipment of John R. Sutson's soap factory, at Mifflinville, Pa., was sold by Sheriff Ent on August 31. The copyright of "Zeno," together with most of the equipment was sold to J. W. Miller, while local residents bought the remainder. The total sum realized was $129.95. The amount of the debt was $5,000 and costs. Sutton was the tax collector of Berwick and absconded some months ago, it is said, about $15,000 in the hole.

Plans have been filed with the Building Department for the enlargement of the John T. Stanley soap factory at 642 West Thirtieth street, New York, to make it a six-story building. It is now five stories high.

William Waltke & Co., St. Louis, Mo., manufacturers of toilet soaps, etc., will make an addition to their plant at Second street and East Grand avenue, and will increase the number of employees by one hundred or more. The new building will stand on the East Grand avenue side of the present group of structures and will have a ground area of 100 by 150 feet. It will cost $50,000. The improvement is being made to keep pace with the growth of the company's business. The addition will be ready for occupancy early next year.

Mr. Ferdinand Weber, of George Dueders & Co., New York, has sailed for Hamburg to join in a family celebration of his father's eightieth birthday.

Mr. Wm. A. Heinz, perfumer for Crofts & Reed, Chicago, is visiting New York, with his wife, to witness the Hudson-Fulton celebration. He reports that Crofts & Reed are breaking ground for a four-story office and display building.

The Cudahy Packing Co., Chicago, will have a large plant erected for the manufacture of Dutch Cleanser. The building is to occupy a plot 200 x 100 feet and will be five stories high.

We were gratified recently by a visit from Mr. H. Leslie Meeker, chemist for the C. S. Morey Mercantile Co., Denver, Colo. Mr. Meeker reports good business, and stated that the company will add a bottlers' and confectioners' supply department.

H. LESLIE MEEKER.

Cailler & Co., Inc., will move on Oct. 1 to 16 Cedar street, New York. They are American agents for the following concerns: Anton Deppe Söhne, Billwärder (near Hamburg, Germany), manufacturers of such specialties as terpineol, safrol, thymal and a general line of essential oils and synthetics; Samuel Weiss & Co., London, shippers of oils citronella and geranium and of civet; Joseph Gazan, Marseilles, maker of flower oils and concretes; H. M. Schmidt & Weber, Halle, a./S., Germany, makers of colors for soaps, perfumes, etc.

On Aug. 20 Mr. D. R. Bradley, the well-known New York perfume manufacturer, visited, with Mrs. Bradley, the works of the Th. Mühlethaler Co., Nyon, Switzerland, and saw the interesting processes involved in the manufacture of synthetics.

Mr. T. W. Sayman, a soap manufacturer of St. Louis, was a recent visitor to New York.

We have received the following letter:

Replying to your inquiry desire to state that the bankruptcy petition against J. R. Gates & Co. was filed January 20, 1909. Total recoveries effected about $7,000.00. Total liabilities about $24,000. A dividend of 12 per cent. was

declared April 19, 1909. A further dividend of from 10 to 12 per cent. may be expected shortly.

I am unable to say whether J. R. Gates & Co. intend to resume business.

Respectfully,
T. W. Withoft, Trustee.

Mr. W. G. Ungerer—"Bill"—returned from a two months' European trip on September 5 by *S.S. Rotterdam.* He visited France, Switzerland and England, and as we prophesied on his departure, he is brimful of news and views that we shall endeavor to prevail on him to indite for these columns.

Mr. Theo. Shipkoff, of Shipkoff & Co., Kazanlik, Bulgaria, arrived in New York on the 17th inst. and is visiting the trade in the interest of his house, which is well known as one of the principal shippers of Otto of Rose.

Rachmann Brothers, Haida, Bohemia, are well known in Europe as manufacturers for perfumers' glassware and specialties. Their advertisement will appear in our next issue, and in our current patent report will be found a brief description of a patent on a new atomizer recently granted by the United States Patent Office. The confidence that Rachmann Brothers have in their goods, based on many years of experience with continental perfumers, has led them to enter the American market.

Mr. E. Schlienger, of Bertrand Freres, Grasse, arrived in New York on *S.S. La Lorraine,* on the 17th inst. This bit of news will mean much to his many personal friends, and those who have not yet had the good fortune to meet this most genial gentleman may anticipate the making of a pleasurable acquaintance. We had rather that Mr. Schlienger had been born under the American flag; but as he is likely to continue to be an annual visitor, his long absences will serve to make his return the more gratifying.

E. SCHLIENGER.

Bernard-Escoffier Fils, Grasse, are now represented in this country and Canada, their agent being Mr. George V. Gross, 130 Pearl street, New York. The House of Bernard-Escoffier Fils was established in 1820, and offers essential oils and specialties for perfumers and soap makers.

Mr. Jean Petcheff, of V. Petcheff & Co., Sopote, Bulgaria, has come to this country to establish a branch office for the sale of Otto of Rose in the United States, Canada, Mexico and South America.

Where an especially strong adhesive for labels on tin is required, Tinnol, made by the Arabol Manufacturing Co., 100 William street, New York, is highly recommended. It is claimed that it is not influenced by the heat and that it does not spot or discolor the labels.

Mr. Theodore W. Stemmler, of T. W. Stemmler & Co., 366 West Eleventh street, New York, will sail for Europe September 30 by *S.S. Prinz Friedrich Wilhelm,* with his family. Mr. T. W. Stemmler, Jr., will look after the affairs of the firm during his senior's absence, which will terminate about December 1. The firm are American representatives of Petko Iv. Orozoff et Fils, Kazanlik, Bulgaria, producers of otto of rose, and Chemical Works Flora, Dübendorf, Switzerland, makers of synthetics.

Messrs. C. H. Graves & Sons, alcohol distillers, 35 Hawkins street, Boston, Mass., are inviting the attention of users of cologne spirits to their XXX French spirit. The firm are particularly desirous of getting into touch with manufacturers of perfumes and flavoring extracts who appreciate the value of using the very best spirits obtainable and who are willing to pay a fair price for a highly refined neutral spirit.

This photograph was taken at the initial meeting of the Flavoring Extract Manufacturers' Association in Cincinnati, on August 25, and pictures Messrs. A. E. Claus (on the left), W. M. McCormick (on the right), and Dr.

S. H. Baer (seated). These three officers are well known in the flavoring extract industry, but we regret that the photograph does not do them justice.

PUBLICATIONS RECEIVED.

We are in receipt of the latest price list of Chemical Works Flora, Dübendorf-Zurich, Switzerland. This is a very complete list of synthetics, including many novelties, and special attention is given to artificial violets, of which ten varieties are offered.

W. J. Bush & Co. (Inc.), New York.—Price list for September.—In this very complete list attention is drawn to oleo resins and other flavoring specialties. The company offers also a number of "Bush Ottos" that are described in our advertising pages.

Chemical Works Roermond (formerly W. Mallmann), Roermond, Holland.—Price list No. 9 is at hand quoting prices f.o.b. European port. Special attention is invited to artificial musk, "Mallmann Brand," for which special qualities are claimed.

Swindell Brothers, Baltimore, Md., have sent us their 1909 price list and catalogue of glassware for perfumers, etc. On September 1 two large furnaces were put in blast and the firm is in a position to supply the trade with any design of cork or glass stoppered bottles. Special attention is invited to the high-grade covered pot flint and colored ware. The business was established in 1873 and its success has been due to the firm's continual efforts to furnish the finest goods at reasonable prices.

"The Present State of the Perfume Industry," by Eugene Charabot, Doctor of Sciences, Member of the Higher Council of Technical Education and partner in the firm of Hugues Ainé, Grasse. This pamphlet of 28 pages (quarto) treats of (1) The Natural Perfumes, and (2) The Artificial Perfumes. The subjects are treated in a general and popular way, but should nevertheless be of interest and value to all perfume manufacturers and chemists.

Scientific and Industrial Bulletin of Roure-Bertrand Fils (Grasse), Series 2, No. 9, April 1909.—We have awaited with some interest the appearance of the Bulletin, but have been rewarded for the delay. This issue is arranged in three parts (1) Scientific Work, (2) Industrial Review, (3) General Section, dealing with the chemistry of essential oils. In the latter section one of the most important chapters is devoted to "The Suppression of Fraud so far as Essential Oils are Concerned." Reference is made to the approaching International Congress for the Repression of Adulteration in Food, Chemical Products, Essential Oils, etc., commonly known as the White Cross Congress, to be held in Paris from October 17 to 24. We quote from the Bulletin:

"Section C., which is charged with the task of preparing, in view of this Congress, the work connected with the raw materials of pharmacy and the essential oils, chemical products and mineral waters, is under the presidency of Professor Guignard, member of the Institute, director of the School of Pharmacy at Paris. A subsection has been more especially charged to deal with the essential oil and aromatic raw materials. It is presided over by M. Louis Pillet, M. Justin Dupont being charged with the report.

"In order to indicate the position unanimously taken up by the sub-commission, we will quote here the preliminary report which has been submitted in its name by M. Justin Dupont to the plenary assembly of Section C.

"Before starting its work, the Commission deems it advisable to present a short *expose* of the point of view from which it has approached the subject which has been put before it, as the result of the observations presented by its members in the course of the first meeting.

"First of all, the sub-section desires to affirm emphatically the principle of the essential variability in composition of the essential oils. Essential oils are the product of the vital processes of plants. They are not definite chemical individuals, but mixtures, frequently very complex, of definite principles. However numerous and exact the researches of which they have been the subject may be, it would be hazardous to pretend, at the present time, to know their composition prefectly. Every day new facts are discovered which go to modify, often very profoundly, the notions previously acquired, even in the case of essential oils which were believed to be perfectly known.

"Our knowledge of the composition of the essential oils is therefore subject to daily modification. And we are not speaking here of the analytical differences which occur in products derived from plants bearing the same names but belonging to different varieties, or even of identical plants but cultivated in different districts. We are referring to essential oils yielded by the same plants, cultivated in the same climate, but the composition of which shows, from one year to another, appreciable divergences. We shall find striking examples of these in the course of our inquiry.

"To give a definition of the pure essential oil from the genuine and commercial point of view is therefore a most delicate task. If perfectly legitimate scruples are felt when it is a question of fixing, from a commercial point of view, the characters of purity of definite products such as chloroform, sodium sulphate and potassium iodide, how much greater prudence must be exercised when it is a question of complex substances like the essential oils! At the most, positive affirmation could be made in the case of gross adulterations by the addition of matters which have never been met in the pure products, such as petroleum, turpentine, fatty oils, alcohol, etc. In all other cases, when it is a question of fixing the proportions of certain definite constituents, one cannot proceed with too much caution.

"This caution will be the constant rule by which the Commission intends to abide in the course of its inquiry. It will not forget that by fixing too absolutely the character of purity, it would often be going against the object which the White Cross has in view, namely, to detect the adulterator and protect the honest trader. It is a fact of general notoriety that these absolute definitions often serve as a special guide to the adulterator, by providing him with a means of importing to his adulterated substances the character of the 'pure' product.

"Far from occupying itself in this direction, the Commission intends, on the contrary, according to the profession of the White Cross, that its work shall contribute assistance to honest trade and shall not in any case be invoked against it. Its work will therefore consist in drawing up a list of the essential oils employed in foodstuffs, hygiene and pharmacy, and in preparing a table setting out the whole of the analytical data known at the present day and relating, not to laboratory samples, but to the current commercial types recognized as pure and genuine by the practical trade.

"In addition to the study of the essential oils, the Commission will undertake that of the other aromatic raw materials utilized in food-stuffs and, in particular, that of artificial fruit essences the definition of which was given by the Geneva Congress in 1908."

Careful attention should also be paid to the following articles: "The Flower Harvests," "The Essential Oils of Spain," and "Olive Oil." Tribute must also be paid for the very fine illustrations in color of *Michelia Champaca* and *Plumeria acutifolia* (Pagoda Flower), the former indigenous to India and the latter of the family of the Frangipannis, natives of Central and South America.

NEW INCORPORATIONS.

Merrill Soap Co., Collinsville, Ill.; capital, $2.000.

Angel City Soap Co., Los Angeles, Cal.; capital, $100,000. Incorporators: H. E. White, C. W. Unger, Jr., W. E. Kinsey, C. H. Gorham and E. W. Kinsey.

Imperial Soap and Polish Co., Chicago; capital, $10,000; manufacture and dealing in soaps, polishes and general merchandise; Frank W. Richey, John C. Lehman and William G. Voss.

The Castor-Lax Co., New York; deal in drugs, chemicals, perfumery, etc.; capital, $500,000. Incorporators: E. Ralph Beck, Edmond R. Lyon, both of No. 258 Broadway; George M. Lawrence, No. 43 Exchange Place, all of New York.

The Grolotco Manufacturing Co., Knoxville, Tenn., has been incorporated to manufacture soap. The capital stock is $4,500. The officers of the concern are William Greever, president; C. Noneberger, vice-president, and J. M. Lotspeich, secretary-treasurer.

Ohio Mfg. Co., Salt Lake City, Utah; capital, $30,000. Officers: John B. Davis, president; Thomas F. Ashworth, vice-president; Otis G. Cross, secretary and treasurer. These, with Theodore Cleghorn and Arthur E. Hubbard, form the directorate. A trade mark registration on the word "Qilo," held by John B. Davis, is taken over by the company at a valuation of $30,000. Mr. Davis will be general manager of the plant, which will manufacture Qilo hair tonic, skin remedies, soap and medicines.

PURE FOOD AND DRUG NOTES.

(Concluded from page 129.)

cent. of oil of lemon, 3.38 per cent less than the normal and recognized lemon extract.

It was apparent that it was not lemon extract, and the statement in the label was therefore false, misleading, and deceptive.

On September 25, 1907, an inspector of the Department of Agriculture purchased from Worden's Grocery, Missoula, Mont., two samples of food products, one of which was lebeled, "2 Ounces. Full Weight, Edwards' Dependable Pure Extract Strawberry. Dwight-Edwards Company, Portland, Ore.," and the other, "2 Ounces. Full Weight. Edwards' Dependable Pure Extract Raspberry. Dwight-Edwards Company, Portland, Ore." These two samples were a part of a shipment made by the Dwight-Edwards Company from Portland, Ore., to Worden's Grocery, Missoula, Mont., on June 18, 1907. Each of the samples was analyzed in the Bureau of Chemistry, United States Department of Agriculture, and was found to be an imitation flavor, artificially colored. The statements in the labels were therefore false, misleading, and deceptive.

The Secretary of Agriculture having afforded the Dwight-Edwards Company opportunity to show any fault or error in the aforesaid analyses, and it having failed to do so, the facts were duly reported to the Attorney-General and by him referred to the United States Attorney for the district of Oregon who filed an information against the said Dwight-Edwards Company, with the result hereinbefore stated.

H. W. WILEY,
F. L. DUNLAP,
GEO. P. MCCABE,
Board of Food and Drug Inspection.

Approved:
JAMES WILSON,
Secretary of Agriculture.
WASHINGTON, D. C., August 17, 1909.

DENATURING OLIVE OIL.

The Secretary of the Treasury has made the following decisions in pursuance of the provisions of paragraph 639 of the tariff act:

(T. D. 29957.)

DENATURING OF OLIVE OIL UNDER PARAGRAPH 639 OF THE TARIFF ACT OF AUGUST 5, 1909.

TREASURY DEPARTMENT, August 20, 1909.

To Collectors and Other Officers of the Customs:

Paragraph 639 of the tariff act of August 5, 1909, provides for the free entry of—

Olive oil rendered unfit for use as food or for any but mechanical or manufacturing purposes, by such means as shall be satisfactory to the Secretary of the Treasury and under regulations to be prescribed by him.

Olive oil to be entitled to entry under the foregoing provision of law either must have been denatured abroad in such a manner as to satisfy the collector that it is permanently unfit for use as food or for any but mechanical or manufacturing purposes, or it must be denatured after arrival, under customs supervision and at the expense of the importer, by one of the following methods, to be elected by the importer:

To 100 gals. of the olive oil to be denatured add any of the following substances:

(*a*) 3 gals. rosin oil, preferably second or third runs.
(*b*) 3 gals. refined destructively distilled wood turpentine, boiling not lower than 100 deg. C.
(*c*) 3 gals. mineral oil such as spindle oil, or a rather crude kerosene.
(*d*) ¼ gal. pyridin.
(*e*) ½ gal. creosote.
(*f*) 3 gals. aniline oil.
(*g*) 6 gals. dark-colored oleic acid.

Oil denatured according to formulæ *b*, *d*, *e*, and *f* must be marked as poisonous.

The officer supervising the denaturing is enjoined to take particular care to have the denaturant thoroughly incorporated with the olive oil.

"Sulphured olive oil" obtained by the extraction of olive oil from press cake by means of carbon bisulphid need not be further denatured.

The department will from time to time prescribe additional formulæ, and will consider any formula for special denaturation that may be submitted by any manufacturer.

To insure the protection of the revenue, 100 per cent. of all olive oils claimed to be inedible, or to have been denatured abroad, will be sampled.

No olive oil will be released free of duty under the said paragraph of law until the owner or consignee shall have filed with the collector of customs an affidavit in the following form:

PORT OF ———.

I, ———, do solemnly declare that I am the owner or consignee of the olive oil described in the invoice and entry hereto attached, that the same is permanently unfit for use as food and is specially imported in good faith for mechanical or manufacturing purposes.

———,
(Owner or consignee.)

Subscribed and sworn to before me this — day of ——, 19—.

———,
(Title of officer.)

JAMES B. REYNOLDS, Acting Secretary.

(T. D. 29976.)

OLIVE OIL.

Denaturing of olive oil under paragraph 639 of the tariff act of August 5, 1909.

TREASURY DEPARTMENT, September 7, 1909.

Sir—Referring to T. D. 29957 of the 20th ultimo, additional formulæ for the denaturing of olive oil are prescribed as follows:

To 100 gals. of olive oil to be denatured add any of the following substances: (*h*) 16 ozs. oil of rosemary; (*i*) 6 ozs. oleoresin capsicum.

Respectfully,
JAMES B. REYNOLDS,
Acting Secretary.
(67686).

COLLECTOR OF CUSTOMS, Baltimore, Md.

PATENTS, TRADE MARKS, ETC.

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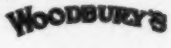

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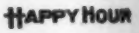

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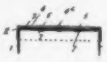
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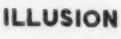

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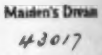

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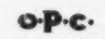

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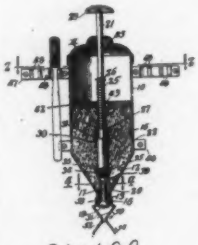
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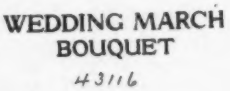

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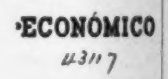

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NOTE TO READERS.

This department is conducted under the general supervision of Samuel E. Darby, Esq., Patent and Trade Mark Attorney, 220 Broadway, New York, formerly Chief Clerk and Examiner, U. S. Patent Office. This report of patents, trade marks, labels and designs is compiled from the official records of the Patent Office in Washington, D. C. We include everything relating to the four co-ordinate branches of the essential oil industry, viz.: PERFUMES, SOAP, FLAVORING EXTRACTS and TOILET PREPARATIONS.

The trade marks illustrated are described under the heading "Trade Marks Applied For," and are those for which registration has been *allowed*, but not yet *issued*. All protests for infringement, etc., should be made promptly to the Commissioner of Patents, Washington, D. C.

All inquiries relating to patents, trade marks, labels, copyrights, etc., will receive Mr. Darby's attention if addressed to

PATENT AND TRADE MARK DEPT.,
Perfumer Pub. Co. 100 William St., New York.

PATENTS GRANTED.

931,498.—CLOTHES-WASHING COMPOUND AND PROCESS FOR MAKING SAME.—John H. Schlueter, Richmond, Va. Filed Feb. 27, 1909. Serial No. 480,444.

1. The method herein described of making a paraffin-protected washing compound, consisting in first dissolving lye and borax in boiling water, then dissolving and stirring therein by boiling a quantity of salts of tartar, portions of the lye and borax being thus combined with the salts of tartar to form potassium borate and sodium carbonate, and then thoroughly mixing the resultant compound with melted paraffin and ammonia and allowing the mass to cool and harden.

2. The method herein described of making a paraffin-protected washing compound, consisting of first dissolving the washing ingredients together in boiling water, then thoroughly mxing the same with melted paraffin, and then after the mass becomes lukewarm and before it hardens stirring in liquid ammonia to cleanse or whiten the mass.

3. A washing compound consisting of a cake of hardened and whitened paraffin impregnated throughout with lye, borax, potassium borate and sodium carbonate.

932,152.—TOILET CLEANING SOAP.—Ralph Lyon, Englewood, N. J. Filed Oct. 8, 1908. Serial No. 456,749.

1. A toilet cleaning soap consisting of soap and abrasive material containing heavy artificially precipitated chalk in

proportions of two or more parts of heavy precipitated chalk to one part of soap by weight.

2. A toilet cleaning soap consisting of a compound of soap and heavy artificially precipitated chalk in substantially the proportions of from about three to five parts of chalk to one part of soap by weight.

932,718.—Atomizer for Perfumes and Other Liquids.—Harry Rachmann, Haida, Austria-Hungary. Filed Nov. 22, 1907. Serial No. 403,344.

1. An atomizer comprising a delivery tube, a mouthpiece closing the end of said delivery tube and provided with a central delivery hole, and a rotary distributor mounted in said mouthpiece provided with a central needle extending back into the end of delivery tube, said distributor having on its outside spiral grooves which extend from one end to the other end.

2. An atomizer comprising a delivery tube, a cylindrical mouthpiece closing the end of said delivery tube and provided with a central delivery hole, and a cylindrical distributor mounted in said cylindrical mouthpiece adapted to longitudinally shift and to rotate and provided with a central needle extending into the end of said delivery tube, said distributor having on its periphery spiral grooves which extend from one end to the other end.

3. An atomizer comprising a delivery tube, a cylindrical mouthpiece closing the end of said delivery tube and provided with a central delivery hole, and a cylindrical distributor mounted in said cylindrical mouthpiece adapted to longitudinaly shift and to rotate and provided with a central needle extending into the end of said delivery tube, said distributor having on its periphery spiral grooves which extend from one end to the other end, the inner surface of the outer end of the mouthpiece being concaved, and the abutting face of the distributor being flat-faced.

933,395.—Toilet Composition.—John C. Sherman, Brookline, Mass. Filed Aug. 3, 1908. Serial No. 446,539.

1. A dessicated toilet preparation comprising a mechanical mixture of milk powder and comminuted soap, the soap being saponified previously to its mixture with the milk powder.

2. A toilet preparation comprising milk powder, a preservative medium of the character described, and comminuted soap.

3. A toilet preparation, comprising milk powder, comminuted soap, and a preservative medium, and an abrasive medium, each of the character described.

4. A toilet preparation, comprising milk powder, borax, and comminuted soap.

5. A toilet preparation, comprising milk powder, borax, comminuted soap, and an abrasive medium of the character described.

933,507.—Sifter-Top Can or Vessel.—George W. Weber, New York, N. Y., assignor to American Can Company, New York, N. Y., a corporation of New Jersey. Filed May 11, 1908. Serial No. 432,036.

3. A sifter container having a sifter opening formed by a plurality of converging cut edges extending from an uncut edge, and an integral lip having a plurality of converging cut edges extending from said uncut edge of said opening, said lip being elongated to cause its cut edges to slightly overlap the cut edges of the opening when it is flattened and straightened back and produce a tight closure, the cut edges of said lip converging to a point to cause the lip to also serve as a disintegrator when opened out at an angle, substantially as specified.

933,699.—Powder-Dispensing Receptacle.—Lauren W. De Lawrence, Chicago, Ill. Filed Nov. 13, 1908. Serial No. 562,365.

5. A powder dispensing device comprising a receptacle or holder provided at its lower end with a discharge opening, a tube extending upwardly from said discharge opening and provided with lateral feed openings above the discharge opening, a valve for controlling the discharge opening, a valve stem carrying said valve and extending upwardly through said tube and an agitator carried by said stem and having upwardly diverging arms which extend outwardly through the lateral feed openings, the arms of said agitator being provided at their ends with diverging fingers.

TRADE MARKS REGISTERED.

74,853.—Hair Tonic and Liniment.—Crude Oil Products Company, Pittsburg, Pa.
Filed April 7, 1909. Serial No. 41,641. Published June 15, 1909.

74,855.—Baby Powder, Perfumery, Face Powder, and Face Cream.—Frederick Stearns & Co., Detroit, Mich.
Filed April 22, 1909. Serial No. 41,938. Published June 15, 1909.

74,856.—Salves, Ointments, Powders, and Tablets for Coughs and Colds.—Franz Fritzsche & Co., Hamburg, Germany.
Filed Jan. 8, 1909. Serial No. 39,780. Published June 8, 1909 .

74,865.—Tooth Powder, Tooth Paste, and Tooth Wash.—I. H. Lewkowicz, Sharon, Pa.
Filed May 6, 1908. Serial No. 34,591. Published June 15, 1909.

74,867.—Soap.—The N. K. Fairbank Company, Chicago, Ill.
Filed April 26, 1909. Serial No. 42,019. Published June 15, 1909.

74,872.—Scalp Remedy.—Scott-Brown Manufacturing Company, Oakland, Cal.
Filed Jan. 8, 1909. Serial No. 39,786. Published June 15, 1909.

74,877.—Soap.—Barclay & Barclay, New York, N. Y.
Filed April 20, 1909. Serial No. 41,891. Published June 15, 1909.

74,921.—Soap.—Peter Day, Philadelphia, Pa.
Filed April 28, 1909. Serial No. 42,083. Published June 15, 1909.

74,955.—Macaroni and Pure Olive Oil.—Felice Graziano Pivirotto, Pittsburg, Pa.
Filed March 20, 1909. Serial No. 41,318. Published June 22, 1909.

74,964.—Toilet Water.—Eleto Company, New York, N. Y.
Filed Dec. 3, 1908. Serial No. 39,072. Published May 18, 1909.

74,975.—Borax and Pawdered Borax.—Sterling Borax Company, Los Angeles, Cal., and Chicago, Ill.
Filed April 15, 1909. Serial No. 41,813. Published June 22, 1909.

74,977.—Italian Olive Oil.—Frank P. Ventrone, Providence, R. I.
Filed Oct. 10, 1908. Serial No. 37,949. Published June 22, 1909.

75,033.—Antiseptic Ointment.—Bear Manufacturing Company, Terre Haute, Ind.
Filed May 7, 1909. Serial No. 42,297. Published June 29, 1909.

75,038.—Tonics and Ointments for the Hair.—Ida B. Clagett, Spokane, Wash.
Filed July 22, 1908. Serial No. 36,258. Published June 29, 1909.

75,039.—Antiseptic Cleaning Compound.—Walter G. Clark, New York, N. Y.
Filed April 16, 1909. Seriol No. 41,818. Published June 29, 1909.

75,058.—Soap for Laundry Use.—The Procter & Gamble Company, Ivorydale and Cincinnati, O.; Kansas City, Kan., and New York, N. Y.
Filed Feb. 27, 1908. Serial No. 33,045. Published June 29, 1909.

75,070.—Preparation for Removing Hair.—Hermann C. Brenner, Boston, Mass.

(*Concluded on page 138.*)

FOREIGN CORRESPONDENCE AND MARKET REPORT

FRANCE.

Our correspondent writes from Nice: "I have kept in close touch with the various flower crops, and can now confirm what I wrote you in July, and also give you additional information.

JASMIN.—The untoward weather that occurred during May retarded this crop at least three weeks. About 1.25 fr. per kilo above normal prices was paid for flowers.

LAVENDER.—The situation is frankly of a discouraging nature regarding this year's crop and yield. Snow fell in abundance late in the spring and the resulting moisture did not have the good results that we hoped for. The flowering of the plants was retarded and the yield is so poor that from 180 to 200 kilograms are required to produce 1 kilo of oil. Prices have ranged from 15 to 20 francs per 100 kilos for the flowers, so it is easily understood why the price of the oil must advance from the present figure of 16 to 18 fr. per kilo. (Sept. 10.) [Latest cable advices fix the price at from 22 to 25 francs.—ED.] Nothing is known yet of the production in the Departments of Gar and Vanclare, though conditions are probably no better there, and in the Italian region the distillers have not yet come down from the mountains.

It has been stated that there are large stocks of last year's oil in Grasse, but my personal investigation has shown this report to be untrue.

SPIKE.—Practically the same conditions obtain as in the case of lavender, to which someone has humorously referred as "Spike with a college education!"

NEROLL.—The orange flower crop has been in the hands of a syndicate during the past few years, and their purpose was originally a good one, viz.: to insure a suitable price to the grower, and thus to make it to his interest to care for his trees properly and assist the oil distiller as far as possible. I fear, however, that the syndicate has forced the prices too high, and unless *reason* supplants *avarice*, there is likely to be some change in conditions next year.

TUBEROSE.—The crop has turned out to be about normal, although no prices have been established for flowers.

It seems strange to us here that although the use of powdered shaving soap has been almost universal in France for years, it is just now being advertised in the United States. Possibly with a view to preserving the *entente cordiale*, stick shaving soap is being pushed here by two prominent American manufacturers.

It gives me pleasure to report the approaching marriage of Mlle. Leonie Ricord, the daughter of M. Leon Ricord of the house of Roure-Bertrand Fils, to M. Demarchi.

I regret to have to inform you of the death of M. Ernest Bertrand, who died a few days ago in Nice at the age of 23 after a long illness. This young man was the only remaining child of the late Chief of the Laboratory of Bruno Court, Grasse. His widowed mother is receiving many sincere expressions of condolence.

SALVADOR.

Statistics indicate that the imports of "Peruvian" balsam into the United States are mainly derived from Salvador. The following report on the culture and curing of the article there, by Consul-General Arthur Hugh Frazier, of San Salvador, will therefore be of interest:

Outside of the country of its origin the commercial name for balsam is Peruvian balsam. This misnomer is a strange survival of Spanish colonial rule, when all products of the colonies situated on the Pacific were assembled at Callao, Peru, for trans-shipment in the fleets of merchantmen which at stated intervals set out from that port for the mother country. Although balsam trees are found in Guatemala and Nicaragua, it may safely be said that Salvador is the only country in the world where the production of balsam is a recognized industry.

The method of obtaining the balsam is as follows: Beginning at a point a foot or more above the ground, a section of the trunk of the tree about 6 inches wide by 10 inches long is carefully pounded with a round stone or blunt instrument until the outer bark can be detached, leaving the second layer exposed; upon this exposed surface a piece of cotton cloth is made fast by wooden pegs driven into the tree. At the end of about five days a small quantity of balsam oozes from the bark and is absorbed by the cloth. After the first flow of balsam has ceased, the surface stripped of the outer bark is warmed by means of a torch until it becomes thoroughly heated; this process has the result of inducing a second flow, which is taken up by the successive application of cloths until no more balsam appears. The burnt section is next gashed with a machete, and after several days a still further flow of balsam takes place. The final yield is obtained by removing the various strata of bark down to the wood with a knife, reducing the bark to a powder and boiling out the residue of balsam with water.

The entire process, which often takes as long as six weeks, is then repeated, continuing the removal of the bark upward along the trunk of the tree until an inconvenient height is reached. The balsam tree shows extraordinary vitality under this treatment, and is able to withstand severe mutilation without losing its vigor or its properties for the secretion of balsam.

After a sufficient number of cloths have been saturated with balsam they are placed in caldrons containing water and boiled for a certain length of time; the impurities rise to the top and are skimmed off, while the balsam, having a higher specific gravity, sinks to the bottom of the caldron. The cloths are afterwards subjected to pressure in a primitive but highly efficient press until the last vestige of balsam is forced out. The resulting flow of liquid is caught up in jars, where it is again separated from the water and impurities by boiling and decantation. The balsam, after being run into galvanized iron cases of 55 pounds capacity, is then ready for shipment.

According to the report of Dr. Paul Preuss, published by the Kolonial Wirtschaftliches Komite, Berlin, 1901, to which the writer is in other respects indebted, the chemical analysis of balsam gives the following results:

Specific gravity	1.1404
Cinnamein, per cent	64.72
Rosin, per cent	18.09 to 18.23

Doctor Preuss estimates that the average tree yields from three to five pounds of balsam in a year.

Balsam is used in medicine as a treatment for wounds and as a remedy for skin diseases; it is also used in the preparation of certain perfumes and hair tonics.

Hamburg is the principal market for balsam, and Hamburg quotations fix the price for the world. Within the last two years prices have fluctuated from 12 to 22 marks per kilo ($2.86 to $5.24 per 2.2 pounds). The price at the beginning of 1909 was 14 marks ($3.33) per kilo. Below is given a table showing the export of balsam from Salvador to the United States and Germany compared with the total export for the past three years:

Year.	To Germany.	To United States.	Total export.
1906	$50,290	$19,250	$72,740
1907	20,500	24,310	68,910
1908	38,580	20,795	82,639

THE DOMESTIC MARKET.

The principal oils of interest in the New York market are rose and peppermint.

ROSE.—The center of the stage has been shifted from Bulgaria to New York on account of the announcement of prices, and the arrival of members of several firms. First quality oil in reasonable quantities should be obtainable at $5.25 per ounce, but this price will doubtless vary one way or the other according to individual orders or general demand.

PEPPERMENT.—Experts who have visited the principal producing districts can see no reason for present prices, save through manipulation. The plants were abundant and in good condition, though even from these observations the yield of oil could not be forecast. We have learned that $1.75 has been paid but purchases are made only when absolutely necessary. The situation has resolved itself into a waiting game.

BEANS.

All varieties of Bourbon vanilla beans are scarce on account of the short crop in all the islands. The lowest price being quoted is $2.50.

The Mexican situation is even worse on account of the outlook for an extremely small crop. The recent hurricane in the Gulf did considerable damage in an important vanilla district.

SOAP MATERIALS.

Tallow, city, .05¾ (hhds.); country, .05½.

Grease, brown, .04½@.04¾; yellow, .04¾@.05.

Cottonseed Oil, crude, tanks, 35@36; summer yellow, prime, .41½@42.

Cocoanut Oil, Cochin, .08¼; Ceylon, .07¾.

Olive Oil, yellow, $1.40@1.50; denatured, 85@1.00.

Olive Oil, Foots, prime, .07⅛.

Palm Oil, Lagos, .06; red, prime, .05½.

Chemicals, borax, .05; caustic soda, 80 p. c. basis of 60 p. c. $1.90.

Rosin, first run, .21; second, .23; third, 25; fourth, 27.

Almond, Bitter.....per lb.....	$3.50	Geranium, Turkish	$2.50	Savin	$1.40
" " F. F. P. A.....	4.50	Ginger	4.50	Spearmint	1.75
" Artificial	.75	Gingergrass	1.35	Spruce	.45
" Sweet, True.....	.55-.60	Hemlock	.55	Tansy	4.50
" Peach-kernel	.30-.35	Juniper Berries, twice rect....	1.10	Thyme, red, French.....	1.10
Amber, Crude.....	.13	Kananga, Java	4.00	" white, "	1.30
" Rectified	.20	Lavender, English	7.00	Vetivert, Bourbon	8.50
Anise	1.15	" Cultivated	2.75	" Indian	42.00
Aspic (Spike).....	1.35	" Fleurs, 28-30%.....	2.25	Wintergreen, artificial	.38
Bay, Porto Rico.....	3.50	Lemon	75	" genuine	4.25
Bay	2.10	Lemongrass	.80	Wormwood	4.50
Bergamot, 35%-36%.....	4.10	Limes, expressed	2.00	Ylang-ylang 50.00-65.00	
Birch (Sweet).....	1.60	" distilled	.80		
Bois de Rose, Femelle	4.50	Linaloe	2.75	BEANS.	
Cade	.20	Mace, distilled	.80	Tonka Beans, Angostura.....	1.25
Cajeput	.53	Mustard, natural 2.75-3.50		Surinam	.55
Camphor	.12	" seed, gen.....	8.50	Para	.50
Caraway Seed	1.30	" artificial	2.00	Vanilla Beans, Mexican.....3.00-5.00	
Cardamon	18.00	Myrbane, rect.	.12	" " " Cut ..	2.75
Carvol	2.45	Neroli, petale.....80.00-90.00		" " Bourbon 2.50-3.00	
Cassia, 75-80%, Technical....	1.10	" artificial	17.00	" " Tahiti 70-1.00	
" Lead free.....	1.40	Nutmeg	.90		
" Redistilled	1.80	Orange bitter	2.25	SUNDRIES.	
Cedar, Leaf.....	.60	" sweet	2.25	Ambergris, black .....(oz.)	20.00
" Wood	.25	Origanum	.40	" gray..... "	25.00
Cinnamon, Ceylon.....6.50-12.00		Orris Root, concrete ....(oz.) 3.50-4.50		Civet, horns ..... " 1.75-1.85	
Citronella	.27	" " absolute 28.50-32.00		Cologne Spirit 2.64-3.25	
Cloves	.75	Patchouly 4.75-5.50		Cumarin	3.30
Copaiba	1.25	Pennyroyal	2.50	Heliotropine	1.70
Coriander 6.00-13.00		Peppermint, W. C.	1.75	Musk, Cab., pods.....(oz.)	8.00
Croton	.75	Petit Grain, American.....	4.50	" " grain ..... "	15.00
Cubebs	2.25	" " French	6.00	" Tonquin, pods..... "	18.00
Erigeron	1.50	Pimento	2.25	" " grain..... "	22.00
Eucalyptus, Australian, 70%...	.50	Rose .....(oz.) 5.00-5.50		" Artificial, per lb.....	1.50
" American	.60	Rosemary, French.....	.80	Orris Root, Florentine, whole	.10
Fennel, Sweet	1.20	" Trieste	.70	Orris Root, powdered and granulated	.13
" Bitter	.75	Safrol	.50	Talc, Italian 01½-.01¾	
Geranium, African	4.00	Sandalwood, East India.....	3.50	Terpineol	.35-.45
" Bourbon	3.50	Sassafras, artificial	.34	Thymol	1.70
" French	11.00	Sassafras, natural	.70	Vanillin .....(oz.)	.33-.35

TRADE MARKS REGISTERED.

(Concluded from page 135.)

Filed April 7, 1909. Serial No. 41,638. Published June 29, 1909.

75,087.—Coffee, Olive Oil, Flavoring Extracts, Spices and German Bird Seed.—Leege & Haskins, San Francisco, Cal.

Filed Oct. 24, 1908. Serial No. 38,223. Published March 16, 1909.

75,136.—Flavoring Extracts.—S. Hamill Company, Keokuk, Ia.

Filed May 20, 1907. Serial No. 27,516. Published July 6, 1909.

75,149.—Abrasive Polishing Material.—American Mineral Cleanser Co., New York, N. Y.

Filed Oct. 21, 1908. Serial No. 38,179. Published July 6, 1909.

LABELS REGISTERED.

15,054.—Title: "Lily of the Valley Illusion." (For Perfumery.) Geo. Borgfeldt & Co., New York, N. Y. Filed June 21, 1909.

15,055.—Title: "Rose Illusion." (For Perfumery.) Geo. Borgfeldt & Co., New York, N. Y. Filed June 21, 1909.

15,056.—Title: "Violet Illusion." (For Perfumery.) George Borgfeldt & Co., New York, N. Y., Filed June 21, 1909.

15,057.—Title: "Birken-Wasser." (For Hair Lotion.) George Borgfeldt & Co., New York, N. Y., Filed June 21, 1909.

15,058.—Title: "Birch Hair Water." (For Hair Water.) George Borgfeldt & Co., New York, N. Y., Filed June 21, 1909.

15,059.—Title: "Narcisse Illusion." (For Perfumery.) George Borgfeldt & Co., New York, N. Y., Filed June 21, 1909.

TRADE MARKS APPLIED FOR.

17,399.—Fritz Kleinsorgen, Elberfeld, Germany. Filed Feb. 28, 1906.—Mouth Washes and Liquid Dentrifices.

33,745.—Societa Produtti Chimico Farmaceutico. A. Bertilli & C., Milan, Italy. Filed March 30, 1908.—Soap.

37,232.—John H. Woodbury Dermatological Institute, New York, N. Y. (Arthur G. Stiles, trustee in bankruptcy), assignor, by mesne assignments, to Andrew Jergens Company, Cincinnati, O. Filed Sept. 4, 1908. (Used ten years.)—Hair Tonic, Scalp Cleaner, Scalp Cream, Skin Lotion, Massage Cream.

39,350.—Campbell, Holton & Co., Bloomington, Ill. Filed Dec. 16, 1908.—Olive Oil, Vanilla Extract, etc.

40,059.—Karl August Lingner, Dresden, Germany. Filed Jan. 21, 1909.—Tooth Powder and an Antiseptic Mouth Wash.

40,064.—National Pharmacy Company, Oakland, Cal. Filed Jan. 21, 1909.—Tooth Paste.

40,264.—Oxygen Products Company, New York, N. Y. Filed Jan. 30, 1909. (Comprising the letters "O. P. C.")—Peroxid Cream.

41,233.—Von Bremen, Asche & Co., New York, N. Y. Filed March 16, 1909.—Olive Oil, etc.

42,233.—The C. B. Woodworth Sons Company, Rochester, N. Y. Filed May 5, 1909. (Used ten years.)—Perfumes, Sachet Powders, Toilet Waters, Toilet Creams, Toilet Lotions, Toilet Powders, Hair Tonics, Bay Rum, Smelling Salts, Tooth Powder, Mouth Washes, Nail Polishing Powders, and Almond Cream and Almond Meal.

42,652.—The Cardolax Company, New York, N. Y. Filed May 24, 1909.—Antiseptic Powder, etc.

42,688.—Jean Senegas, New York, N. Y. Filed May 26, 1909. (The signature is a fac-simile of my signature.)—Hair dressing and Hair Tonic.

42,741.—The Omega Chemical Company, New York, N. Y. Filed May 29, 1909.—A Remedy for Skin Diseases.

42,903.—Alexander Smith, New York, N. Y. Filed June 8, 1909.—Antiseptic Powder.

42,905.—Geo. Borgfeldt & Co., New York, N. Y. Filed June 8, 1909.—Perfumery.

43,017.—Eugene Moulie, Jacksonville, Fla. Filed June 14, 1909.—Perfumeries.

43,020.—Peter J. Schneider, Detroit, Mich. Filed June 14, 1909.—Hair Tonic.

43,055.—F. A. Bongartz, Jersey City, N. J. Filed June 17, 1909.—Hair Tonic, etc.

43,116.—Colgate & Co., Jersey City, N. J., and New York, N. Y. Filed June 19, 1909. (Used ten years.)—Perfumes.

43,117, 43,234, 43,235.—Colgate & Co., Jersey City, N. J., and New York, N. Y. Filed June 19, 1909. (Used ten years.)—Soaps for Toilet, Laundry, Shaving and Household Use and Soap Powder.

At a recent meeting of the chemical trade section of the London (Eng.) Chamber of Commerce, a discussion was held on the new tariff as affecting English perfumes exported to the United States. A complaint was made by Messrs. John Gosnell & Co., Ltd., who stated that the "United States Customs" were claiming an *ad valorem* duty not based on their export invoice price, but on the wholesale selling price in this country (England). In reply the secretary of the London Chamber of Commerce said the question was not a new one, and there did not appear to be any possible chance of successful representation to the American authorities, as they had laid down that for duty purposes the market value is to be based upon the wholesale price of the goods for home consumption in the country of export.

Instead of continuing a profitless discussion, and endeavoring to have the American "authorities" change a very laudable practice, it may be well for our English cousins to acquaint themselves with the text of the law, by which the American "authorities" are sometimes guided. The Payne law states "that such market value is the price at which the merchandise described in the invoice is freely offered for sale to all purchasers in said markets, and that it is the price which the manufacturer or owner making the declaration would have received, and was willing to receive, for such merchandise sold in the ordinary course of trade in the usual wholesale quantities."

OLEORESIN VANILLA PATENT.

(*Concluded from page* 122.)

5. The new product described, which is an oleoresinous extract from vanilla bean, of brownish-amber color and gummy consistency, containing the following constituents identifiable by analytical determination, namely 10 per cent. approximately of vanillin, 41 per cent. approximately of neutral resins brownish in color, of the consistency of soft paraffin, insoluble in aqueous alkali but soluble in ether, and 31 per cent. approximately of organic acid and acid resins, amber yellow in color, of pasty consistency, soluble in aqueous alkali and alcohol and yielding on sublimation fine white crystals melting at about 73.5 deg. C.

In testimony whereof, I have hereunto affixed my signature this 19th day of September A. D. 1907.

Witnesses:

William A. Lemcke, EDWARD J. SHEEHAN.

H. T. Fenton.

(*Claim No. 6 omitted.*)

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SALESMAN WANTED for an essential oil house. State experience, salary desired, etc. Address, in absolute confidence, Box 199, care of this journal.

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A large perfume and toilet article house desires the services of an experienced chemist and perfumer for their factory outside of New York. State age, experience and salary required; also give references. Address (by letter only), X. Y. Z., care Lord & Thomas, 250 Fifth avenue, New York.

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ATTENTION MANUFACTURER.—For line representation on Pacific Coast, write Chas. H. Adler, 227 Lumber Exchange, Portland, Oregon.

WANTED—A position as food and drug analyst. Have had training and experience, and can furnish references. Address E. S. R., care of this journal.

YOUNG MAN is looking for a position to manufacture a fine line of toilet preparations and perfumes. Ten years' reference. B. G., care of this Journal.

COMPETENT CHEMIST, who is a technical graduate of 8 years' experience with essential oils and in the manufacture of perfumes, toilet preparations, &c., desires to make a change. Age 24; single. Salary $25 per week. Address X, Box 123, care of this journal.

AN EXPERIENCED PERFUMER, skilled in the compounding of concentrates for perfumes, toilet preparations, etc., is open for engagement. Address M. A., care of this journal.

CHEMIST—Perfumes, Toilet Preparations and Essential Oils; young German chemist, acquainted with modern laboratory work; speaking English and French, desires steady position; best references. Address R. A., care Perfumer.

POSITION WANTED—Manager of manufacturing department for a wholesale grocery or specialty house. Thoroughly experienced with all details of the business. Clearly understands how to buy, make and market. Address Chemist, care of this journal.

MR. MANUFACTURER.—Having worked in the laboratory of a leading perfumer for three years, I am looking for a position as salesman. Have sold goods for a chemical company. Do you realize the advantage I have over the other fellow; if so, address, E. J. C., care of this journal.

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POSITION WANTED.—Experienced factory manager, well versed in details of economical production and with practical working knowledge of the manufacture of high-grade perfumes and toilet preparations, desires to locate with progressive house. References furnished. Address MANAGER, care of this journal.

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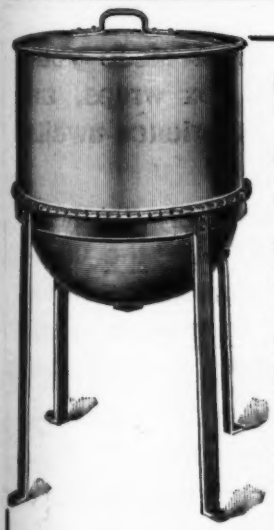

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